Amateur Radio

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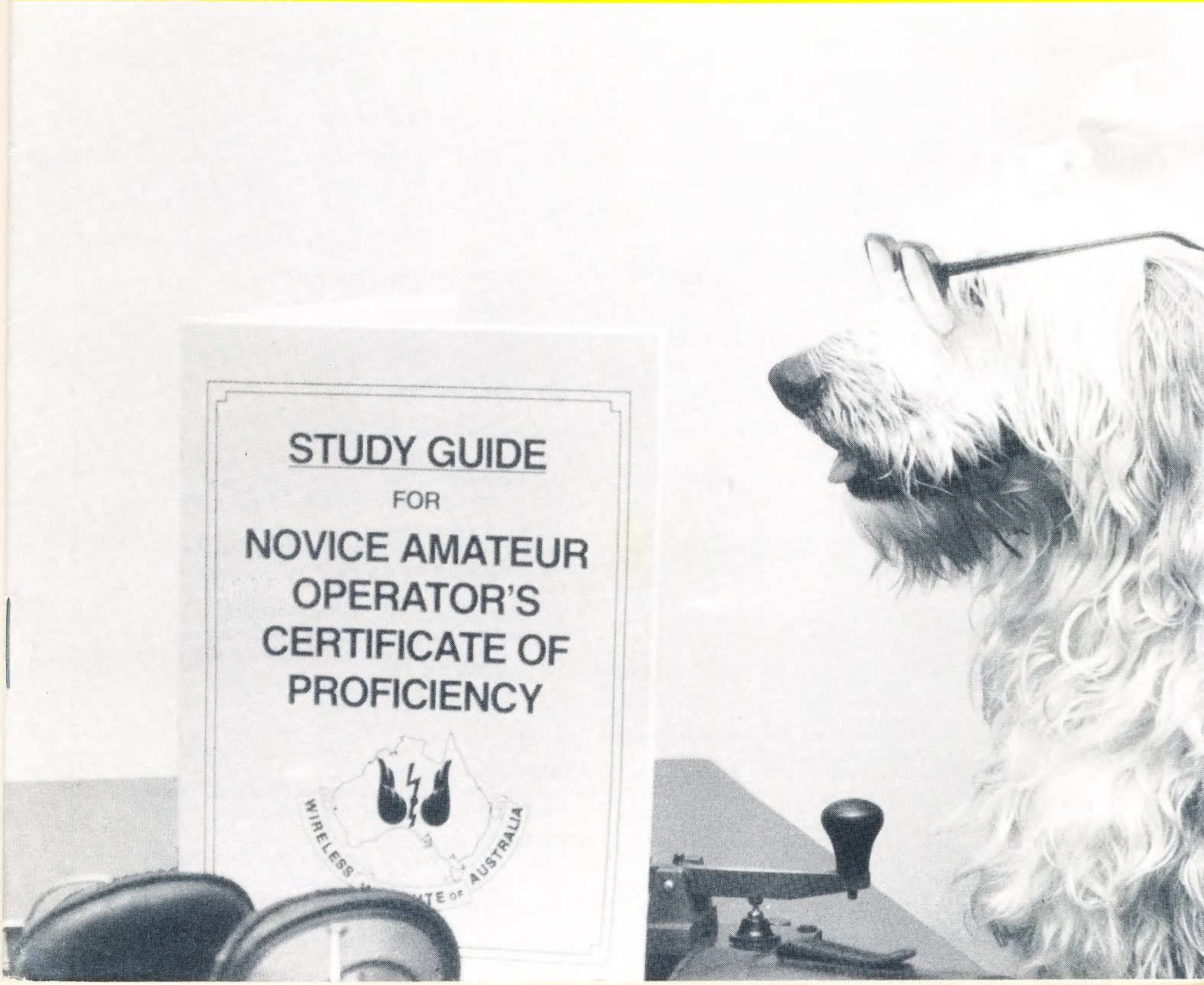

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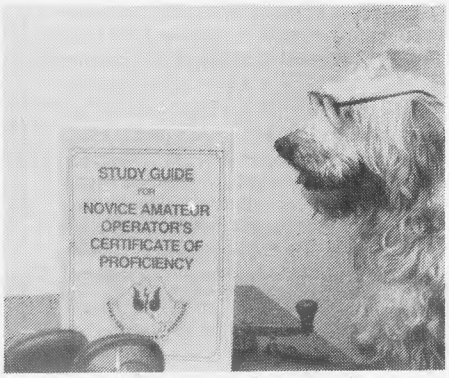

Even Zoe is interested in the new NAOCP Study Guide which is now available for $2.50 plus postage.
—Photograph courtesy Vanessa McLachlan

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All copy for inclusion in the April 1988 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, February 22, 1988.

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Material should be sent direct to **PO Box 300, Caulfield South, Vic. 3162,** by the 20th day of the second month preceding publication. **Note:** Some months are a few days earlier due to the way the days fall. Check page 1 for deadline dates. **Phone: (03) 528 5962.**

HAMADS should be sent direct to the same address, by the same date.

Acknowledgment may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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Editor's Comment

THE NEXT TWO HUNDRED YEARS

It is two hundred years since Australia's first European settlers began to carve out of the Port Jackson bush a place to be known as Sydney. We are reminded everywhere that this is our Bicentennial Year. How has civilisation evolved since 1788, and what might life be like in another 200 years?

When the First Fleet arrived, there were only four widely-used sources of energy; and only one of those, wind, was capable of propelling ships for great distances. The others were human muscle power, animals (horses, donkeys, oxen) and water-wheels. Electricity was a vaguely-appreciated natural phenomenon, violently present in lightning, and otherwise only good for twitching the legs of Galvani's frogs! The first steam engine had come into use some years before, and was able to pump water, but slowly and inefficiently until James Watt devised the condenser and later the centrifugal governor, barely 10 years before Phillip and his fleet set sail. Even gas lighting had yet to appear.

The first men to fly had left the Earth's surface, beneath Montgolfier's hot air balloon, just over four years before the Fleet arrived. As for signalling over a distance, even the semaphore had yet to be invented, and ships could only communicate over visual distances using flags.

But the pace of invention quickened. By 1888, steam-powered ships were well developed, railways ran great distances in most civilised countries, the petrol engine was making the first motor cars possible, electricity was being generated in central power stations and beginning to challenge gas for municipal and private lighting. The telegraph system spanned the world, and the advent of powered flight was not far away. Even the possibility of "wireless telegraphy" was being demonstrated by Hertz.

It was at about this time that a man whose name (or even existence) I am unable to establish, is alleged to have resigned his job with the British Patents Office, on the grounds that he could see no future in it, that everything that could be invented already had been!

Since then, of course, we have had aircraft and automobiles, turbines and terawatts, transistors, ICs, computers and space exploration, teleprinters, television, nuclear energy and nuclear weapons, two World Wars, hundreds of minor wars, and now a glimmer of hope that mankind is not quite as near to nuclear suicide as most of us had dreaded. Perhaps our species will survive. What will our descendants see in 2188?

Some things are very likely. It seems that the "greenhouse effect", of our own making, will have warmed the planet and altered climate everywhere. But the general use of nuclear energy will reduce the rate at which we load the atmosphere with carbon dioxide, so perhaps the ice-caps will not have melted and drowned all sea-level cities. In Australia, only Canberra would remain, of our present capitals, if this should happen.

Liquid hydrocarbon fuels may still be in use, but the world's oil will long since have been drained dry. Synthetics, from coal or wood (or sea-weed?) will have been created instead. Solar energy and incredibly compact storage batteries will probably be the main means of vehicle propulsion. Our present primitive space travel will in 200 years have developed beyond recognition. It may be that in 2188 the First Fleet (of Homo Sapiens from Terra) will be approaching the third planet of Alpha Centauri!

And amateur radio? Perhaps; but the communications engineer's aim, to place every person in contact with every other as and when desired, should by then have been long achieved. Will there be a place for the amateur in 2188? I am not game to guess; are you?

Bill Rice AX3ABP
Editor

Recipients of the 1987 Publications Committee Awards announced.

See page 26.

FEDERAL NEWS

At the time of writing this office is busy processing membership subscriptions for 1988 — obviously Bankcard, Mastercard and Visa have made life easier for many members.

Whilst we have been officially closed, we have been unofficially open working on your subscriptions. For some members it is the only time they can choose books from the Magpubs section, etc, so we have had a steady stream of members paying their subs and purchasing books, T-shirts, etc. As we are so busy we are not able to give members as much personalised attention as we would like at this time.

Thanks to the many members who have advised us of change of call sign and address or grade. If you know any non-members who have not notified us of any changes, please give them a gentle reminder.

There has been a slight problem for members with several lines in their address. There is one line needed for internal office code, and three lines available for name, and address.

Thanks also to the many members who have written letters, or notes and enclosed these with their subscription. We are always grateful for constructive advice, and need to be constantly aware of how our members think. All letters are read, noted and appreciated.

Whilst thanking people, now is a perfect time to thank all those volunteers who work so hard for the Institute. Each Division has a band of hard working volunteers, and the Federal Executive has many volunteer workers, too. Year in and year out the same faces appear again to do the hard work needed to keep the Institute going. From the Federal Office to you all — our grateful appreciation.

There will be shipments of books arriving in the new year, so please ask your Division if you require assistance with a selection of technical books.

INTERNATIONAL TRAVEL HOST EXCHANGE

Remember this worthwhile program. If you have ever enjoyed hospitality from friends overseas, you know what it is like to be in a foreign country and not know where to start looking for a fellow amateur, or club. Even if you do not have a spare room or speak a foreign language — register as a friendly Australian amateur just to meet our overseas visitors and have a chat. We have many letters from overseas visitors or intending migrants requesting advice, etc. Can you help? Send your name and address to the Federal Office and we will forward a form to be filled in and we can add your name to the register.

Compiled by Ann McCurdy
Federal Office Secretary

THE WIA MANAGEMENT IS DEMOCRATIC!

by Ron Henderson VK1RH

&

Peter Gamble VK3YRP
Members of the Federal Executive

Yes, we mean it — management of the WIA is democratic! However, it is structured very like our Federal Government and has many similar inherited problems.

Like our Federal Government, the WIA State Divisions came first, except for the Australian Capital Territory Division, who are relative newcomers. At a much later date the Divisions agreed to hand over a number of common responsibilities to a Federal body, retaining only those activities which needed to be conducted by the Divisions. Appendix 1 lists the objectives of the Federal body.

FORMAL STRUCTURES OF THE WIA

We are, each one of us, members of a Division of the WIA. Generally, as a result of inter-divisional agreements, we belong to the Division in which we reside. Years ago we paid our subscriptions to our Division and they remitted a per capita amount to the federal body to finance Federal services such as *Amateur Radio* magazine, membership of the International Amateur Radio Union (IARU), and administrative costs. Of recent years, with the introduction of a computer system, the Federal Office has maintained the membership register, collected subscriptions and returned the Divisional component (which varies from Division to Division).

Each of the seven Divisions is a member of the Federal body and are represented by their Federal Councillor. In company law the Divisions are share-holders of the Federal Company registered in Victoria. Just like any other company the shareholders meet annually at the Federal Convention to determine policy and instruct the directors on the future direction of their company. Those directors are more commonly known as the Federal Executive. Thus you see that it is not an adversary or we-and-they situation, Division and Federal, but rather one of determination of policy by the Federal Councillors and implementation of that policy by the Federal Executive.

Furthermore, that implementation is not carried out in isolation, for Federal Councillors receive minutes of all Executive meetings as progress reports of actions taken. Reports are also made in AR magazine and one Federal tapes for the benefit of members.

EXISTING POLICY

A "Quick Guide to Extant WIA Policies", essentially an index to Federal Convention motions passed by the Federal Council, is maintained by the Federal Office and a copy held by each Federal Councillor. Of recent times, a series of Policy Statements on major issues have been agreed. These include all the major aspects of amateur radio and provide useful background as to the reasoning adopted by the Federal Council.

This existing policy forms the guidelines for all Executive actions and matters diverging from agreed existing policy are invariably referred back to Federal Councillors throughout the year.

PROPOSING POLICY

The correct forum for proposing policy is by means of an agenda item at the Federal Convention. There is also a mechanism for postal voting by the Federal Councillors throughout the year. However, this should be reserved for essential matters.

Agenda items may be raised by Divisional Councils, Divisional meetings, conferences of clubs or individual members of Divisions. However, it must be remembered that such items can only become agenda items if they are proposed by a Division. In every case they must be researched carefully, checked against existing policy (from the Quick Guide) and discussed at Divisional Council level. It is useful to air them at Divisional business meetings and on broadcasts to gauge membership response. If the Federal Executive receives agenda items sufficiently early, they are published in AR. Unfortunately, in recent years, many agenda items have been received less than a fortnight before the Convention, thus preventing effective prior consideration by the Federal Councillors and thus the members.

Before being forwarded to the Executive, proposed motions must be carefully drafted, having any relevant references listed and researched, and the supporting arguments assembled. The Divisional Council must filter motions, determining that they are indeed the wish of members and then supporting them. Caution must be exercised in forwarding motions "because a group of members want it", though it may be politic to do so under exceptional circumstances.

THE FEDERAL CONVENTION

The Federal Convention is normally held for three days over the Anzac Day weekend and is usually held in Melbourne. The seven Divisions

send their Federal Councillor and the "deputy" (or Alternate) Federal Councillor. Some Divisions also send observers, who are either members of the Divisional Council or a specialist in some important policy area that is coming up for discussion. The members of the Federal Executive are also in attendance and visitors are welcome.

Initial business centres around the receiving of reports from the various Federal Office-bearers, such as the President, Treasurer, Editor of *Amateur Radio,* Chairman of the Federal Technical Advisory Committee (FTAC), Contest Manager, Education Co-ordinator and so on — a total of 18 reports were presented to the last Convention! Some of the reports give rise to policy recommendations which are then debated. At the conclusion of the debate the motions are voted on by the seven Divisional Councillors and if carried, become policy. Note that the members of the Federal Executive do not have a vote on these or other agenda items.

Following consideration of the reports, the agenda items are then debated. There were 28 items discussed at the 1987 Convention, ranging from the organisation of the WIA,. through band planning items, to the on air behaviour in the amateur bands. Usually, the more information that is available, the better the quality of the debate. This information can come from a variety of sources — from the background provided by the mover of the motion, from previous policy decisions, from the results of debate by Divisions, clubs and members prior to the Convention and from the specialised knowledge of those gathered around the Convention table.

Difficulties can arise when the motion is framed in terms of "That the such-and-such be discussed". Such a motion is usually readily agreed to and the matter raised is then discussed. However, if there are no firm ideas or directions put forward by the mover as part of the background material, then other Councillors find that they are not well briefed on the issue and the discussion can often drift aimlessly.

SHORTFALLS IN THE CURRENT SYSTEM

Most of the shortfalls in the current system can be attributed to lack of awareness of the following matters:

- The Federal Executive manages WIA Federal matters throughout the year according to directions from the Divisions given through their Federal Councillors at the Annual Federal Convention.
- Members do not belong directly to the Federal body, yet that organisation, by agreement, manages the membership register, collects subscriptions, publishes AR and provides some member services.
- Members a venue for many member services, including voicing their views, is through their Divisions and thence through their Federal Councillor to the Federal body.
- The capacity of the Federal Office to carry out major activities above and beyond routine administration is limited. We employ a Secretary/General Manager and two staff, all on part-time conditions and the Executive are all unpaid volunteer amateurs, principally from Melbourne, giving their time to our Institute.
- The Federal component of subscriptions is set by the Federal Councillors at each Federal Convention, some eight months before it applies. Three elements make up that component:
  - the IARU Region 3 subscription as set every three years at the Regional Conference,
  - the Federal administrative element, and
  - the *Amateur Radio* magazine element (currently running at about 50-55 percent of the total Federal component).

  To this each Division has to add its own component.
- Presently changes can only be made by altering policy through the tortuous route of member/club to Division to Divisional Council to Divisional Federal Councillor to a Federal Council meetings once a year at the Federal Convention.

  This raises the question "have we too many levels of management, predominantly volunteer, in the WIA?

The Federal Executive is currently reviewing these and other related issues.

Appendix 1
Objective of the Wireless Institute of Australia

The following points are extracts from the Articles of Association of the WIA, a company incorporated in Victoria under the Companies Act and limited by guarantee. Your Federal Councillor has a copy of the full list of 16 objectives of the Company.

1. To represent generally the views of persons connected with amateur radio in Australia and its territories.

2. To promote co-operation between the Divisions and similar institutions interested in the encouragement and development of amateur radio in Australia and to promote mutual interchange of ideas.

3. To safeguard the interests of the Divisions and the members thereof and obtain for them such frequency allocations and rights and privileges by representations to Federal, State or any other appropriate body.

4. To promote the development, progress and advancement of amateur radio.

5. To acquire and disseminate information and advice on amateur radio.

6. To undertake the control of competitions, contests, tests and records in connection with amateur radio.

7. To consider, originate, promote and procure reforms and improvements in laws affecting radio communication, frequency allocations and amateur radio.

8. To buy, sell and deal in radio parts and components and other requirements of the Divisions and the members thereof.

9. To impart training and instruction in radio and allied subjects.

10. To affiliate with the international organisation known as the IARU.

ar

GETTING ON AIR — Part 1
16A Power Supply

Peter Parker VK6NNN
C/- Witchcliffe Post Office, WA. 6286

This short series of articles is intended for the new amateur with little money and a desire to build some equipment for an amateur station. A few old televisions are useful for parts. A trip to the local rubbish tip may yield some suitable sets, if you are lucky.

Every experimenter with valves needs a good power supply providing 6.3 volts AC and about 250 volts DC. A transformer as large as possible should be chosen to provide enough power for the transmitter which will be described later.

The transformer should be free of smell or leaky chemicals. The thick winding of the transformer is usually the 6.3 volt LT winding. Other checks should be made, such as with an ohm meter.

The secondary winding for the HT may be tapped.

The filter capacitor should be in good condition or purchased new. Dick Smith Electronics sell 100 uF filter capacitors. The supply should be enclosed in a wooden or earthed metal box. Do not take any chances with high voltage.

PARTS LIST

QTY	DESCRIPTION
2	Silicon Diodes (EM401, etc)
2	Fuse Holders
1	250-500 mA fuse
1	1-1.5 A fuse
1	Power Transformer 240V → 150V, 6.3V
1	Electrolytic Capacitor 100 uF 350-400V
1	100 kohm resistor
1	3-pin plug and lead
1	DPDT switch
	Box, wire, screws, bolts

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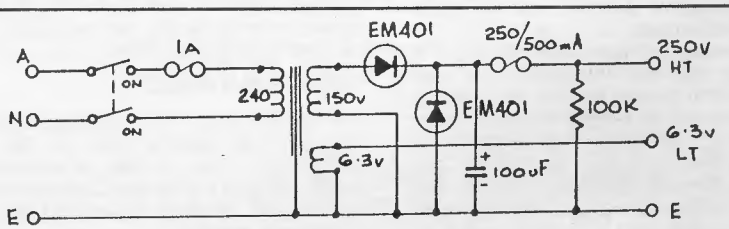

Figure 1: A Power Supply for Valve Equipment.

A modified version of the Dick Smith 2 metre Folded J Antenna, this antenna is actually another version of the *Slim Jim.*

Errol Chick VK3GG
15 Vida Street, Essendon, Vic. 3040

A TRIM SLIM JIM

It is a very satisfactory antenna — the design is of a boomless masthead antenna which rises to a maximum height above the feedpoint. A metal mast may be used.

The antenna has been tailored to two 2.5 inch centre spacing exhaust pipe U-bolts. These are readily obtainable from automotive muffler retailers. The following explanation and specification will facilitate home-brewing.

Three aluminium tubes are required. The first is of 9.5 mm diameter and is 2060 mm long. Some extra length may be desirable to allow for bending and trimming. The other two tubes are 12 mm diameter and 1020 mm long.

One of the 12 mm diameter tubes will need to be cut into two lengths. One length is of 155 mm and the other is 840 mm long.

The two cut lengths must then be fitted with the 75 mm long, 13 mm internal diameter plastic tube insulator. They are then fixed by pop rivets or self tapping screws. Holes must be drilled for the fasteners. It is important that both the uncut 1020 mm tube and the tube split by the insulator are of the same length.

The top bracket has to be drilled in line 13 mm diameter top and bottom. The U-bolt holes must be in line, too. Then the bottom bracket must be drilled 13 mm diameter but on the top only.

Feed the two 12 mm diameter tubes through the holes drilled in the brackets. Allow for the selected spacing between the brackets. Then drill the tubes through the U-bolt 8 mm (5/16") mounting holes. Next mount the assembly tightly on the mast in the desired position.

Fit the bottom bracket level and flush against the tube ends. Attach so that the tubes are parallel to the mast.

Drill the tubes through the U-bolt holes in line with the U-bolt and bolt- up the bottom bracket and tubes. Cut off any excess ends of the U-bolts. The tube mast can be weather-proofed with a rubber plug.

Starting from the top, the U-bend is made by tightly packing the 9.5 mm tube full of sand. Firmly seal the ends. Bend the middle 100 mm around a piece of circular pipe with a diameter equal to the internal diameter of the tube loop.

If heat from a blow torch is necessary, rub soap on the part to be bent and bend the tube when the heat turns the soap brown. After bending, cut off and trim any distorted end to make the required length of 2060 mm, end-to-end.

The bent tube has to fit neatly into the two tubes of 12 mm diameter.

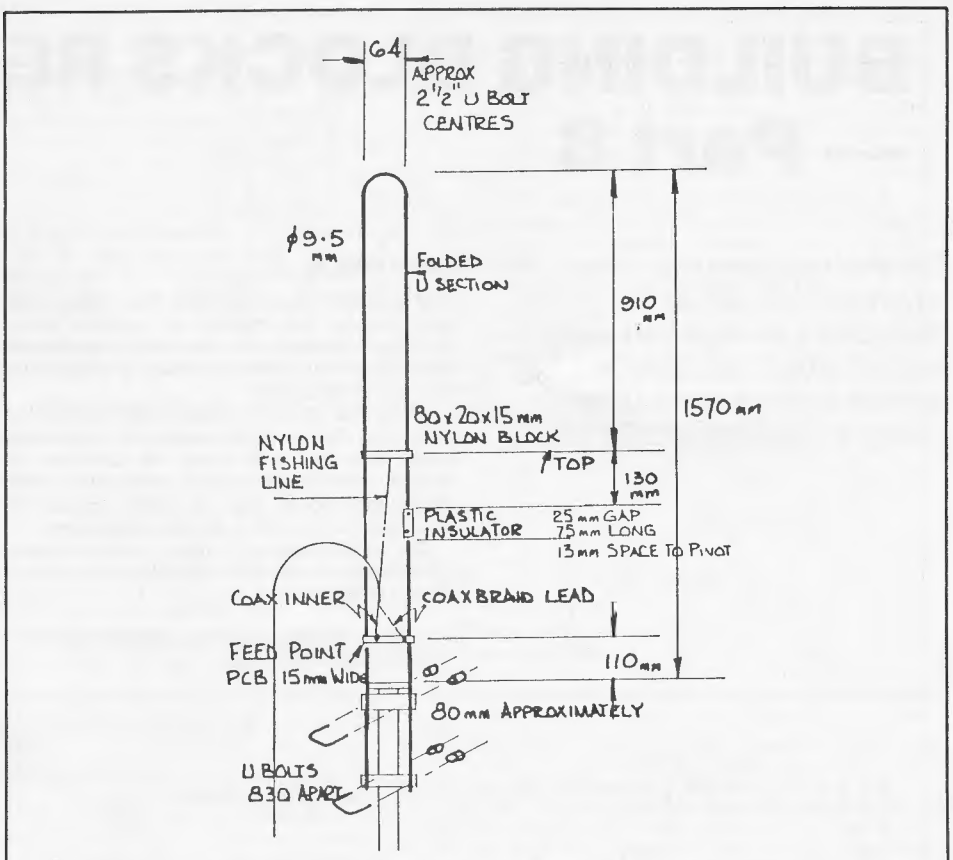

Figure 1.

The nylon block is a necessary spacer and anchor. If positioned flush with the top of the thick tubes it is both a ledge for sealing compound and a measuring base.

Alternatively, printed circuit board 20 mm wide may be used instead.

Both tubes should be used as an anchor for the strained fishing line.

The ends of the bent tube need to be cleaned externally with steel wool. Similarly, the internal ends of the 12 mm tubes should be cleaned with a rat tail file. Then coat the cleaned surfaces with conducting paste. Insert the bent tube into the 12 mm tubes.

Before locking the tubes in position with self-tapping screws or pop rivets, use a small hose clamp to anchor the loop while adjusting the length which controls the frequency of operation and the minimum SWR.

Because the loop tube section of the Dick Smith tubing is long it will probably have to be shortened with a hacksaw or tubing cutter on the insulator side. This will probably be necessary to clear the pop rivet near the top of the insulator.

The feedpoint bolts, etc, as supplied are quite flimsy, particularly if thick coaxial cable is used. Change over to 3/16 inch bolts and nuts and more solid solder lugs.

The feedpoint uses wrap-around aluminium strips. The strips and the tubes, where they make contact, need to be treated for conduction in the same manner as the bent tube ends. Clean them with a file and steel wool as appropriate and use conduction paste. The Printed Circuit Board is placed in the middle for support.

The bolts go through the board first, both aluminium flaps and then the lugs. The mounting holes are spaced to lock the strip very tightly against each tube with very little gap.

The Dick Smith version relies on the top U-bolt as an earthing bar. It is unsatisfactory to use dissimilar metals for earthing. Use a semi-wrap-around earth bar above the top of the mast to get over this problem.

Clean the strip and tubes where it is to be clamped to enable good conduction. Use steel wool, etc, as before. Fix it in position with self tapping screws or pop rivets.

The next adjustments are vital for minimum SWR. The coaxial cable must join the feedpoint 180 degrees from the bottom matching section. A low loss cable is desirable. I used RG213. If heavy cable is used it is necessary to cut and strip off about 70 mm of braid and solder a strong lead to the braid end. That is longer than normal, but it is necessary to provide the leverage needed by the fishing line to hold the coax in the right position.

Terminating both the lead and inner cable to a solid circular lug is recommended, particularly if it is necessary to remove the cable for the frequency and matching adjustments.

Temporarily use string for support instead of the nylon fishing line and be sure to reset the coaxial position exactly the same every time a matching adjustment is made due to its critical effect on the SWR.

Finally, slot the nylon block or PCB strips so the line angle will not change. The fishing line or weatherproofed cord needs a lot of tension to properly anchor the heavy cable. Fortunately the use of a locked G-knot (AR October 1985, p49) is ideal for that purpose.

If thin coax is used some means of keeping the cable away from the bottom matching section may be necessary.

With adjustments finalised and tested a suitable waterproofing compound should be used on all junctions.

As a guide, my Trim Jim is mounted 800 mm from the antenna earth point to the top of an angled metal workshop roof with a 1:1 SWR at 147 MHz, 1.1:1 at 148 MHz and 1.35:1 at 144 MHz using the specifications given.

ar

BUILDING BLOCKS REVISITED — Part 8

Harold Hepburn VK3AFQ
4 Elizabeth Street, Brighton, Vic. 3186

The final module to be covered in this series describes a six digit frequency readout which can also be used as a stand-alone DFM having a resolution of 100 Hz.

DISCUSSION

The modules so far described have many uses and can be put together to perform many functions. However, the most widely perceived grouping is that which finishes as a single band receiver or transmitter.

Whilst the 10 turn multidial used to tune the VFO (see Part 4 of this series) is reasonably linear, and can quite easily be calibrated to indicate operating frequency, there can be little doubt that some sort of direct readout of operating frequency is a decided advantage.

The requirements of a direct readout system compatible with the other modules in this series can be defined thus:

1. Ability to handle two input frequencies and display their difference.
2. Have a resolution of not worse than 100 Hz.
3. Have a quick reaction to movements of the VFO knob.
4. Have crystal locked stability.

The first requirement is dictated by the frequency plan used. Reference to Part 5 will show that:

$$F(inj) = F(sig) + F(IF)$$

or

$$F(sig) = F(inj) - F(IF)$$

Given that the F (IF) is, in fact, that of the BFO and that F (inj) is the feed to the Receiver/ Transmitter mixer, the counting system must display the difference between these two inputs.

The need to do some "calculation" rules out the possibility of using "single chip" counters or simple "UP" decade counters so that this display is designed around discrete "Up/Down" devices — specifically the TTL 74192 series.

If the minimum number of displays is taken as six — then the resolution — that is the value of the most rightmost digit — is set at 100 Hz.

To minimise the cycle time — that is the time taken between any changes in the VFO tuning knob and a display of the new frequency — the time taken to count the two inputs, determine their difference and put up a steady reading, must be kept low. In practice, the cycle time must be kept below 0.15 of a second if the display is to appear to change instantaneously. In this design the cycle time is 0.1 seconds.

The need for stable and reliable operation dictates that the timing system is derived from a crystal source.

There is one other problem that must be taken into account. That is to ensure that the system will handle all the frequencies involved. Reference to Table 2 of Part 5 of this series shows that the maximum frequency encountered is the 38 MHz injection in the top 500 kHz section of 10 metres.

38 MHz is a bit beyond the specified limit of standard or LS TTL devices so that either the S or F series of TTL devices have been used where required. To further assist in the handling of this maximum frequency problem, the inputs have been divided by two after the necessary squaring up process, and the sampling times doubled to compensate.

Figure 34 is a functional block diagram of the complete counting system.

The (sine wave) inputs from the BFO (Module 6, Part 2), and the injection generator (Module 7, Part 5), are buffered, amplified and brought to TTL levels and then divided by two in identical signal conditioning sections.

Two single gates control the passage of the conditioned inputs into the counter and display section.

Four single pulse signals are required to control the operation of the system. They are — in given order:

1. A pulse to open the injection gate for 20 mS.

Then

2. A pulse to open the BFO gate for 20 mS.

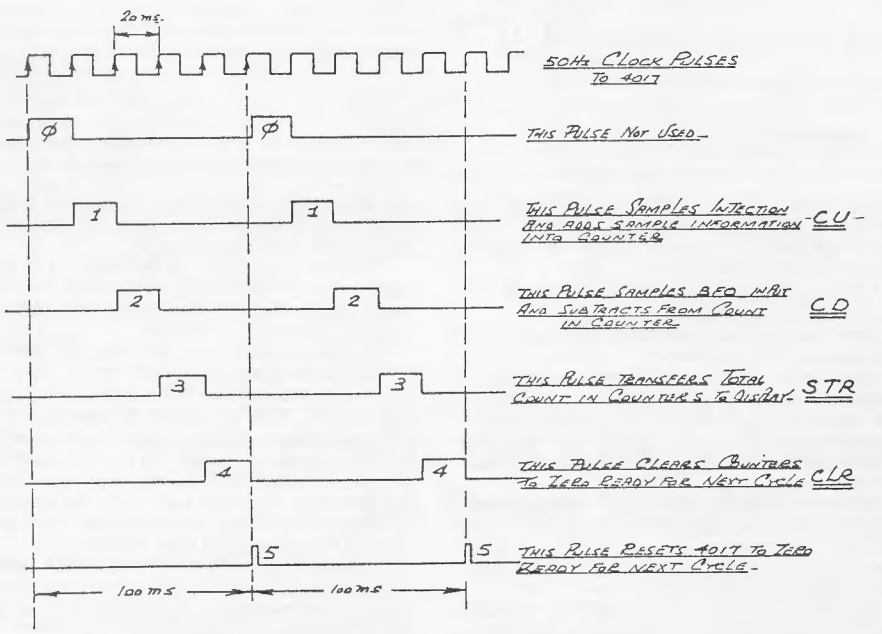

Figure 35: System Timing Diagram.

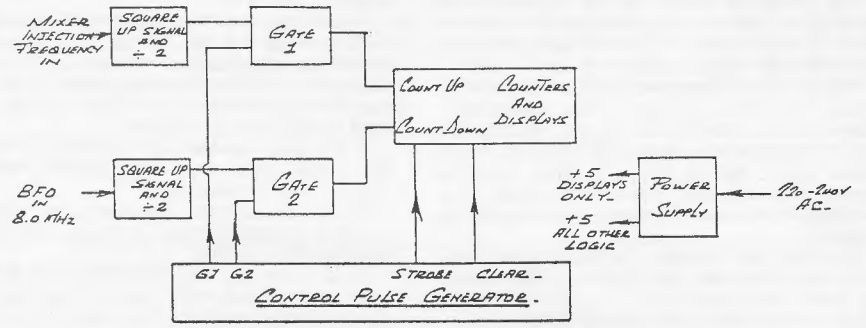

Figure 34: Block Schematic of Counter/ Readout.

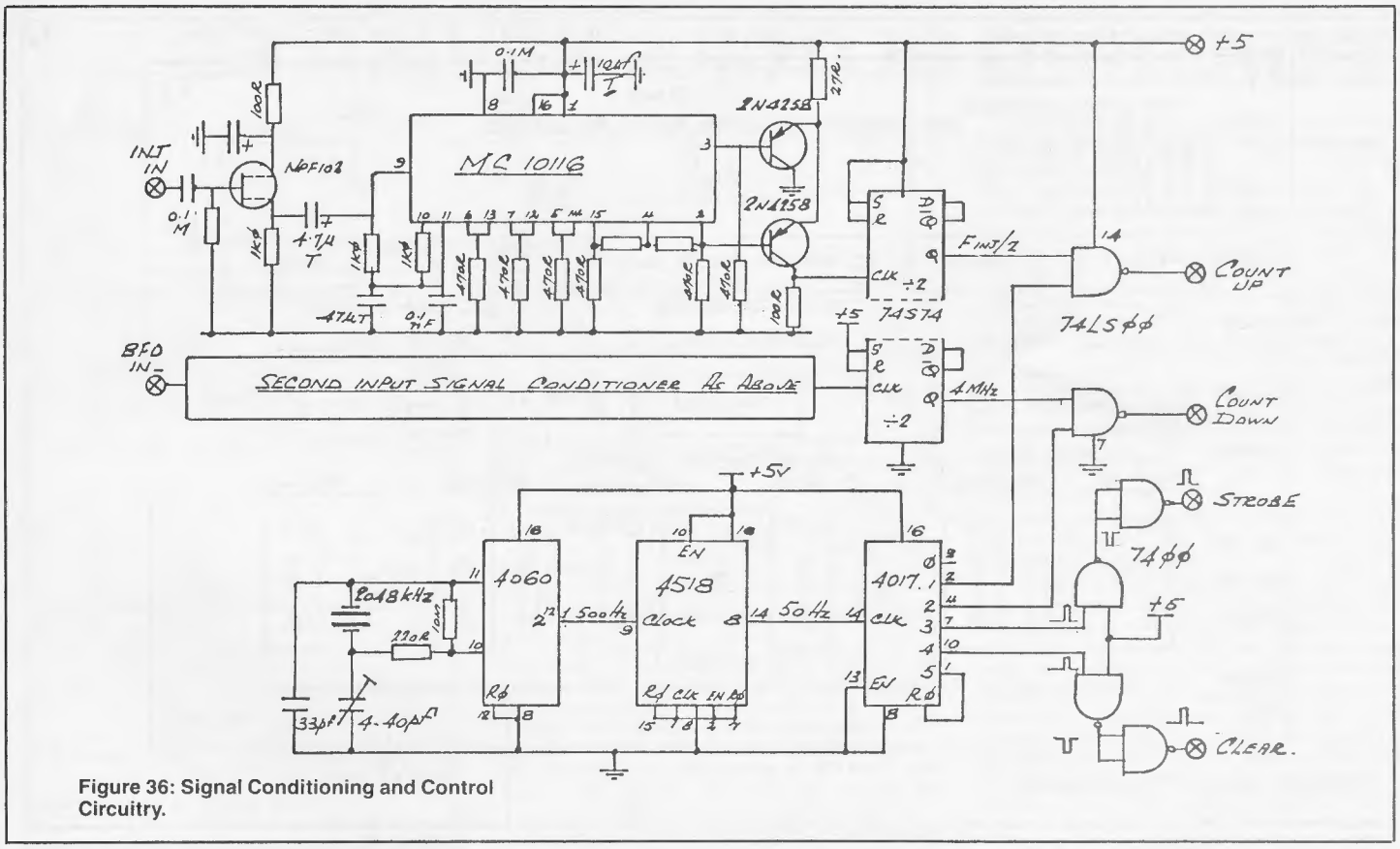

Figure 36: Signal Conditioning and Control Circuitry.

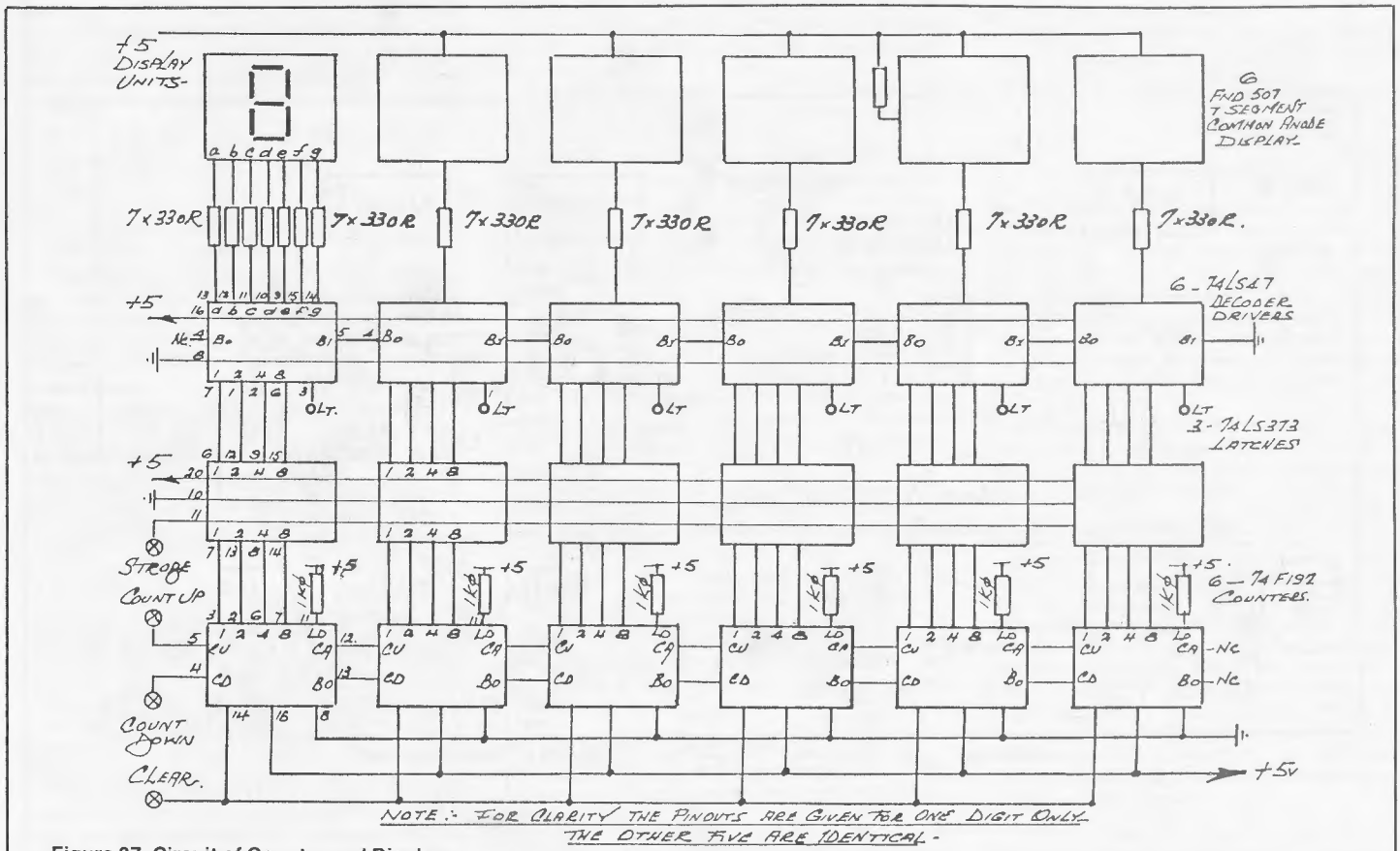

Figure 37: Circuit of Counter and Display. NOTE: For clarity, the pinouts are given for one digit only. The other five are the same.

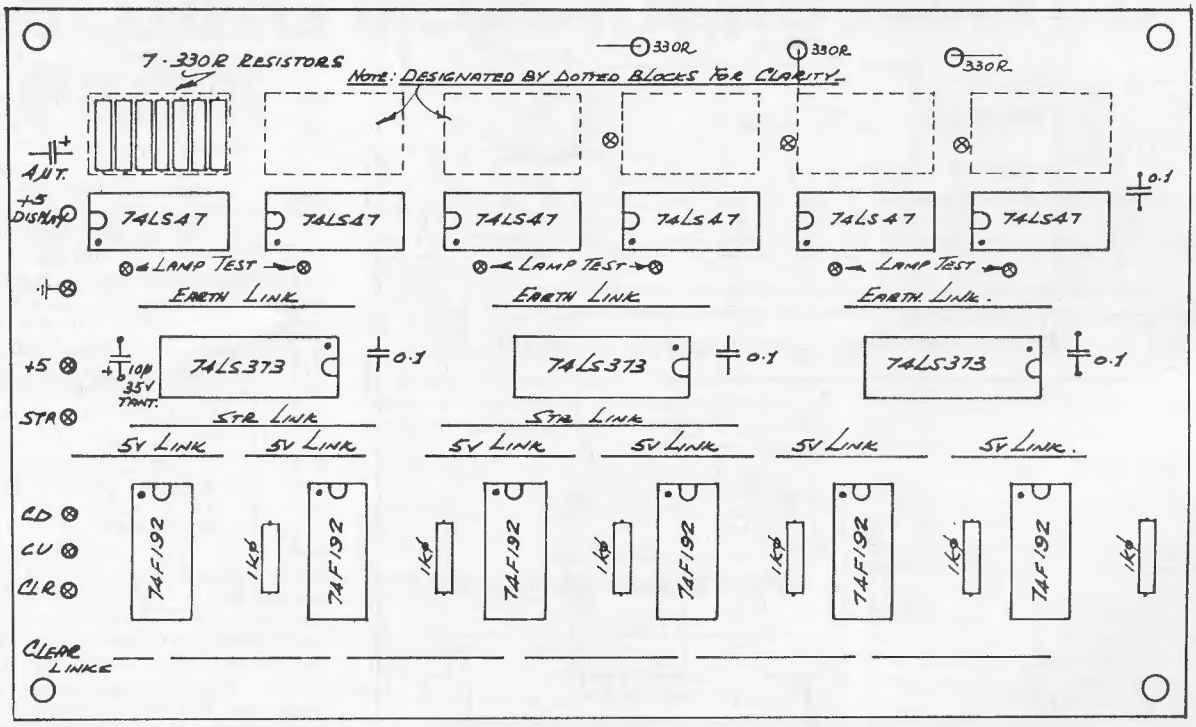

Figure 38: Layout of Counter Board.

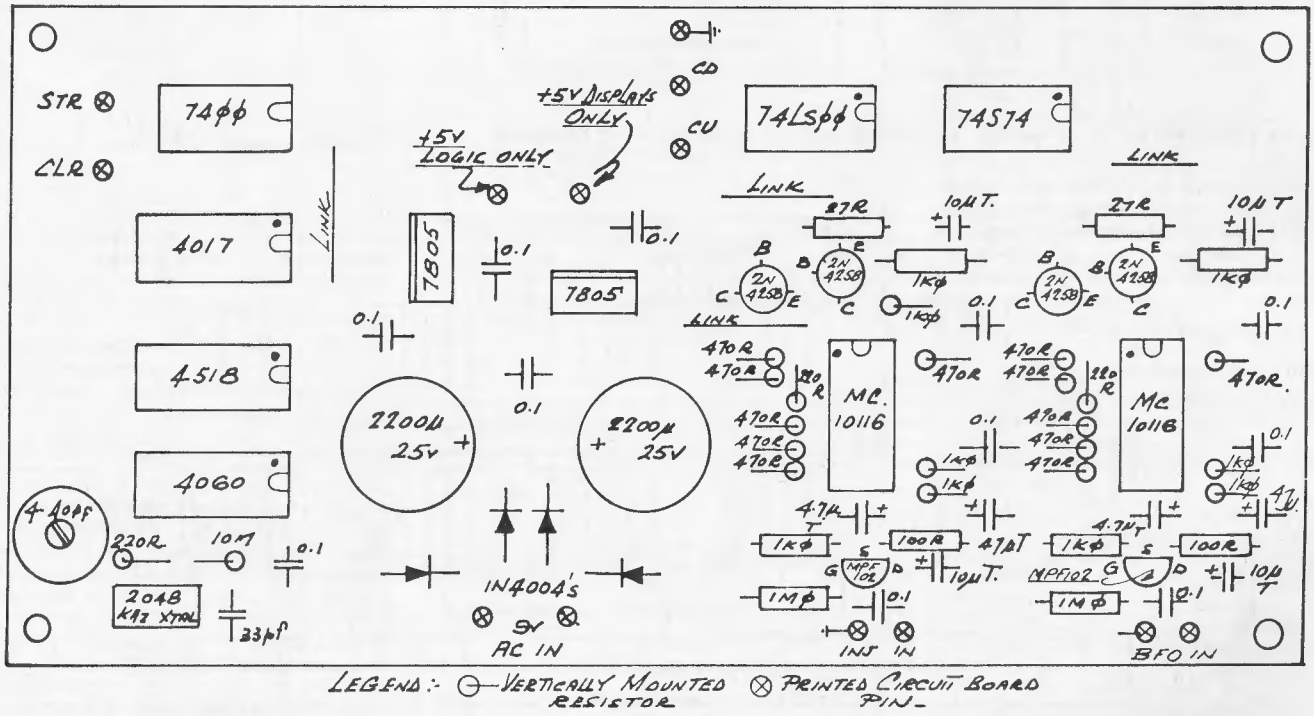

Figure 39: Layout of Counter/Control Board.

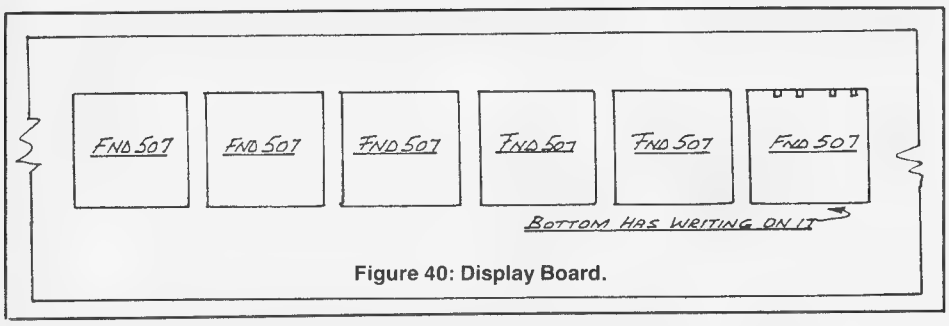

Figure 40: Display Board.

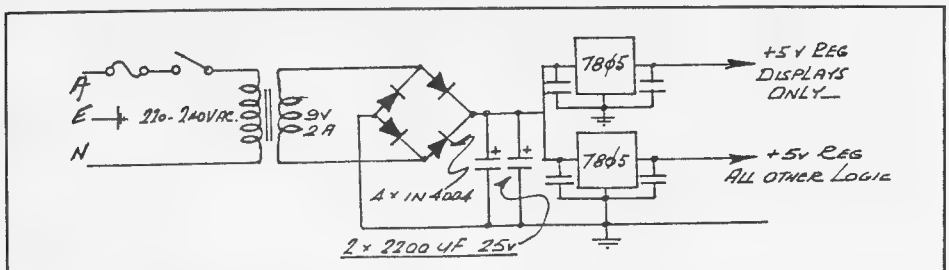

Figure 41: Power Supply.

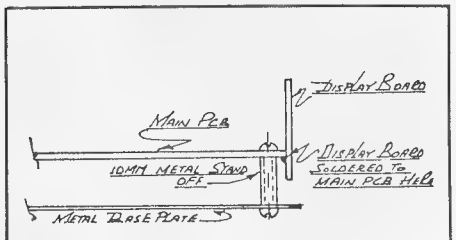

Figure 42: Board Mounting Detail.

Then

3. A pulse to transfer the count into the displays.

Then

4. A pulse to clear the counters ready for the next cycle.

The system timing diagram is shown in Figure 35. It will be noted that the total cycle time for the four control pulses is 100 mS so that the count is updated 10 times per second to give the desired "quick follow" action as the VFO tuning is changed.

CIRCUIT DESCRIPTION

(i) Signal Shaping and Control

The detailed circuit of the signal conditioning and control pulse generator is given by Figure 36.

Two identical signal shaping circuits are provided, one for the injection input and one for the BFO input.

An MPF 102 is used as an input buffer to present a high input impedance and a low output impedance. Input to the buffers will be via small (22 pF) capacitors from pin 8 of the transmitter/ receiver mixer and from pin 8 of the product detector. The signal level will probably be around 100 mV RMS in both cases. This is more than sufficient for reliable operation of the signal conditioners.

The buffer is followed by a Motorola MC10116 quad line driver. In this application, three of the four sections are used as amplifiers and the fourth as a Schmitt trigger. The resultant square wave output at ECL level is not capable of directly driving the subsequent divider and is raised to TTL level by the two 2N4258 PNP transistors.

The (now TTL compatible) signal is divided by two in a 74S74 D type flip flop before entering the signal gate formed by one section of a 74LS00. Output from the two signal gates are taken to the counter section. Note that the highest frequency the flip flop has to handle is 38 MHz and substitution of the specified 74S device by normal or LS devices is not recommended.

A crystal on 2048 kHz is used in conjunction with a CMOS 4060 oscillator/divider to give an output at 500 Hz. This is further divided down to 50 Hz in one section of a 4518 dual decade divider.

A CMOS 4017 device is used to produce the required four successive control pulses (Gate 1, Gate 2, strobe and clear).

The 4017 has 10 output pins numbered 0 to 9. With no input, output pin 0 (OP0) is high and the other nine (OP1 - OP9) are low. The first rising side of an incoming pulse train causes OP0 to go low and OP1 to go high. The second rising side takes OP1 low and OP2 high, and so on up to OP9.

In this design, the high on OP0 is not used. The high on OP1 is used to open the injection or "Count Up" gate while the subsequent high on OP2 is used to open the BFO or "Count Down" gate. The next high — on OP3 — is used to strobe the count onto the displays and the next high — on OP4 — is used to clear the counters back to zero.

In order to reduce cycle time, OP5 is connected to the reset pin on the 4017. As soon as OP5 goes high it resets the device back to zero, OP0 goes high and the cycle repeats.

Whilst a CMOS output will drive a single TTL or LSTTL input, the Strobe and Clear outputs will — in this design — be called on to drive six TTL inputs. The Strobe and Clear CMOS outputs from the 4017 are each buffered with two sections of a 7400 quad Nand gate to oversome this drive problem.

(ii) Count and Display Section

Figure 37 gives the circuit of this part of the system and it will be seen that it consists of six electrically identical "digit" sections. Each section consists of a 74F192 up/down counter, half of a 74LS373 octal latch, a 74LS47 decoder driver and a FND507 seven segment, common anode, LED display.

The six 74F192 counters are effectively in series. Signals fed into the "Up" input cause the counters to increment from 1 upwards, Any signal then fed into the "Down input will then decrement whatever count was in the counters on a "one for one" basis.

In this design the injection frequency is always higher than that of the BFO. By first "adding" in the injection frequency via the "Up" input and than "subtracting" the BFO frequency via the "Down" input, the residual count represents the frequency to which the Transmitter/ Receiver is tuned.

At the end of the two sampling periods (the "up" and "down" counting periods) the "signal frequency" is on the six counter BCD outputs and on the six latch BCD inputs. As soon as the strobe pulse is applied to the latches, the count on their inputs is transferred to the latch outputs, and from there through the 74LS47 driver/ decoders to the displays. Note that this reading stays on the displays, irrespective of what may happen on the counters, until the next strobe pulse arrives.

Finally, the clear pulse is applied to the string of 74F192 counters and they are reset to a zero count ready for the next cycle.

The use of the 74F series of counters may be queried since a simple 74192 or 74LS192 on its own is capable of handling the highest frequency of 19 MHz (38 divided by two), that the system calls for. However, the six counters used introduce finite in/out transfer delays. These transfer delays are cumulative and, in the case of the slower, devices have the effect of restricting the top frequency response to around 12/15 MHz. The 74F series should not be placed with the cheaper 74 or 74LS series if operation over an injection frequency of 12/15 MHz is anticipated.

The 74LS47 decoder/drivers have a couple of features which are of interest.

Firstly, they have the facility to blank out leftmost leading zeros. If used, as it is in this design, a signal on 80 metres reads:

3.4567

and not

03.4567

which makes for an improvement in readability.

Secondly, the 74LS47 has a control pin, marked "LT" on the circuit diagram, which, if earthed, lights up all seven segments irrespective of whatever the rest of the logic says. This facility is useful if it is suspected that any of the segments of the display has "blown". On the circuit layout each of the six "LT" pins is made available on top of the board to allow this "Lamp Test" to be carried out.

Since the design has set both the number of the displays and the resolution, it follows that the position of the decimal point in the display is also fixed. It is brought into use on the second most significant digit by taking the appropriate pin high through a 330R resistor.

It should be noted that a separate five volt supply is provided to power the displays. There are two reasons for this. Firstly, the current changes, with changes in the display readings, are quite high so that, if possible, the supplies to the rest of the logic should be protected from these current surges. Secondly, the power supply itself (to be described in the next installment) has to provide at least a two amp capability and it is simpler to use two separate 7805 on board regulators to do this than to use a single two amp regulator.

This series will conclude in the a future with descriptions of the board layouts, constructional hints and commissioning notes.

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RADIATION RESISTANCE, LOSS RESISTANCE AND ANTENNA EFFICIENCY — *A METHOD OF MEASUREMENT*

Lloyd Butler VK5BR
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Antenna resistance is the sum of radiation resistance and loss resistance. A method of measurement is described to separate those components so that antenna efficiency can be calculated.

It is an easy matter to measure antenna resistance using a noise bridge or other impedance measuring device but more difficult to resolve what part of this is radiation resistance and what part is loss resistance. A knowledge of the value of these components is particularly important in antenna systems using the earth or a counterpoise as part of the antenna resonant circuit and where the earth loss resistance causing significant reduction in antenna efficiency.

Use of the well-known three earth stake method of measuring earth resistance is satisfactory for DC or power frequencies but would give a misleading result if used to estimate earth loss in a grounded antenna operating at radio frequencies. The fact that the upper layers of the earth form a lossy part of the dielectric between the earth and the antenna wire is sufficient in itself to add losses not evident by this method of measurement. Furthermore, if radials are used as a common counterpoise, resistance to general earth is of little relevance.

METHOD OF MEASUREMENT

The writer has experimented on antennas at 1.8 MHz with a measurement method based on the following:

(1) Radiation resistance falls sharply as the ratio of antenna length to wavelength is decreased, that is, it falls sharply as frequency is decreased.

(2) Whilst loss resistance might vary to some degree with frequency, over a restricted frequency range its value could be expected to be reasonably constant.

The procedure is to plot antenna resistance as a function of frequency starting at the operating frequency (or a little higher) and going downwards. Figure 1 shows that such a plot on an antenna derived by measuring resistance at spot frequencies using a noise bridge coupled to a tunable receiver. It can be seen that the resistance falls sharply with a decrease in frequency to a point where the radiation resistance is comparable with loss resistance and the curve turns to form a straight line.

The straight line represents loss resistance (R1) and antenna resistance (Ra) is read directly from the curve at the operating frequency. Radiation resistance (Rr is calculated from (Ra-R1) and antenna efficiency is the ratio (Rr/Ra). From the curves, the antenna has a loss resistance of 9 ohms. At 1.8 MHz, he antenna resistance is 16.5 ohms giving a radiation resistance of 7.5 ohms and an antenna efficiency of 45 percent. At the other end of the band, 1.875 MHz, the antenna resistance is increased to 27.5 ohms, giving a radiation resistance of 18.5 ohms and an antenna efficiency of 67 percent.

The measurement method has been repeated on a number of other antenna wires at 1.8 MHz with usable results. The method seems practical providing the antenna is not too short, giving a radiation resistance much smaller than the loss resistance. In this case, it would be difficult to resolve the radiation resistance component.

DIFFICULTIES IN MEASUREMENT

Noise level on the band below 1.8 MHz is inherently high, not to mention the numerous carriers from broadcast stations, their harmonics and other sources. The carriers can be avoided but because of the high noise level, the writer had some difficulty in resolving the null at balance of the bridge.

Improved measurement resolution was obtained by coupling a signal generator into the last noise amplifier stage of the noise bridge (refer Figure 2) and setting the frequency to that of the receiver for each measurement. With tone modulation on the signal generator, the bridge was adjusted for a 'null' in received tone. The receiver S-meter was also used for fine adjustment.

One point concerns the accuracy of the bridge. It is important that the resistance balance control is accurately calibrated and this can be done by checking its calibration using known values of non-inductive resistance connected at the bridge input. Calibration of reactance balance control is not required as this is only used to phase out antenna reactance which is not being measured.

Before concluding this article, some discussion took place with the Editor, who raised a question concerning the curve plotted for the antenna under test in Figure 1.

In this curve, resistance appears to rise with frequency at a much greater rate than might be expected from theoretical considerations. The reason for this is made apparent by extending the measurement to 2.4 MHz as shown in Figure 3.

Series resonance was measured at 1.73 MHz, where reactance was zero, but there is a sharp hump in the value of resistance at 1.95 MHz, possibly caused by interaction with other antenna wires or other objects in the writer's backyard. The hump is not another resonant point as the antenna is highly inductive over the whole frequency range shown above 1.73 MHz. Unless the antenna is out in the clear, away from other antenna wires and metal structures, bumps and kinks in the plotted curve seem to be difficult to avoid.

A FEW MORE DETAILS

The best antenna is a sloping wire terminated in a 'T' section at its end. The highest portion at the 'T', is only house gable height and hence radiation resistance at the resonant frequency is quite low. By pure chance, the effect of the hump is to raise this resistance in the 1.8 MHz band to advantage.

SUMMARY

Assuming validity of the assumptions made, the method described to separate the components of radiation resistance and loss resistance appears satisfactory within certain limits. If anyone has any comments on this method, or can suggest some other method, these comments or suggestions would be welcomed. We would certainly be interested to see the experiment performed on a more ideal antenna such as a quarter wave vertical.

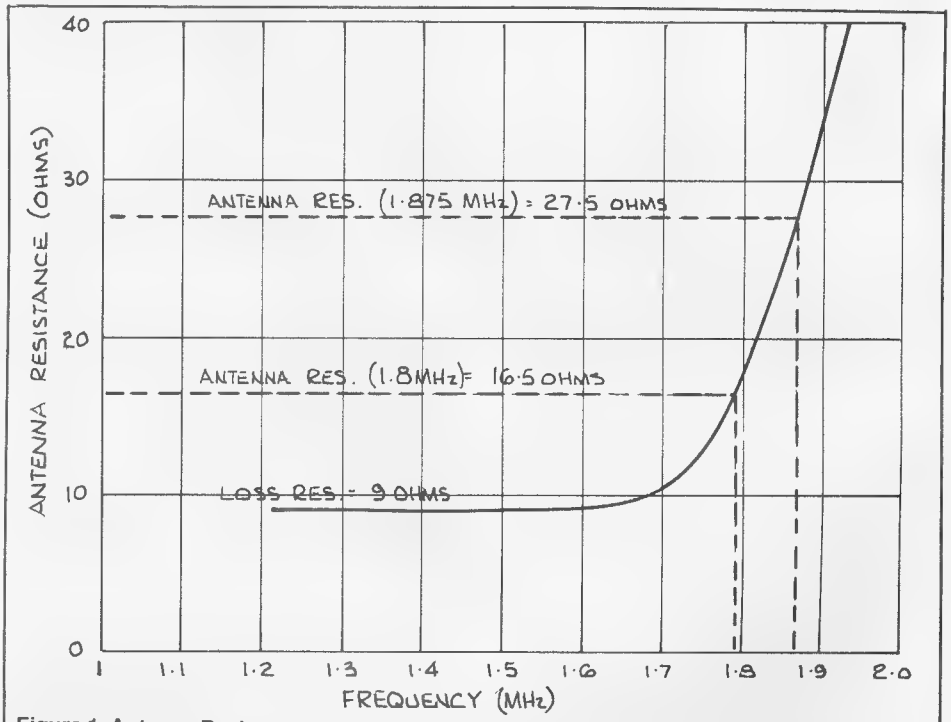


Figure 1: Antenna Resistance versus Frequency.

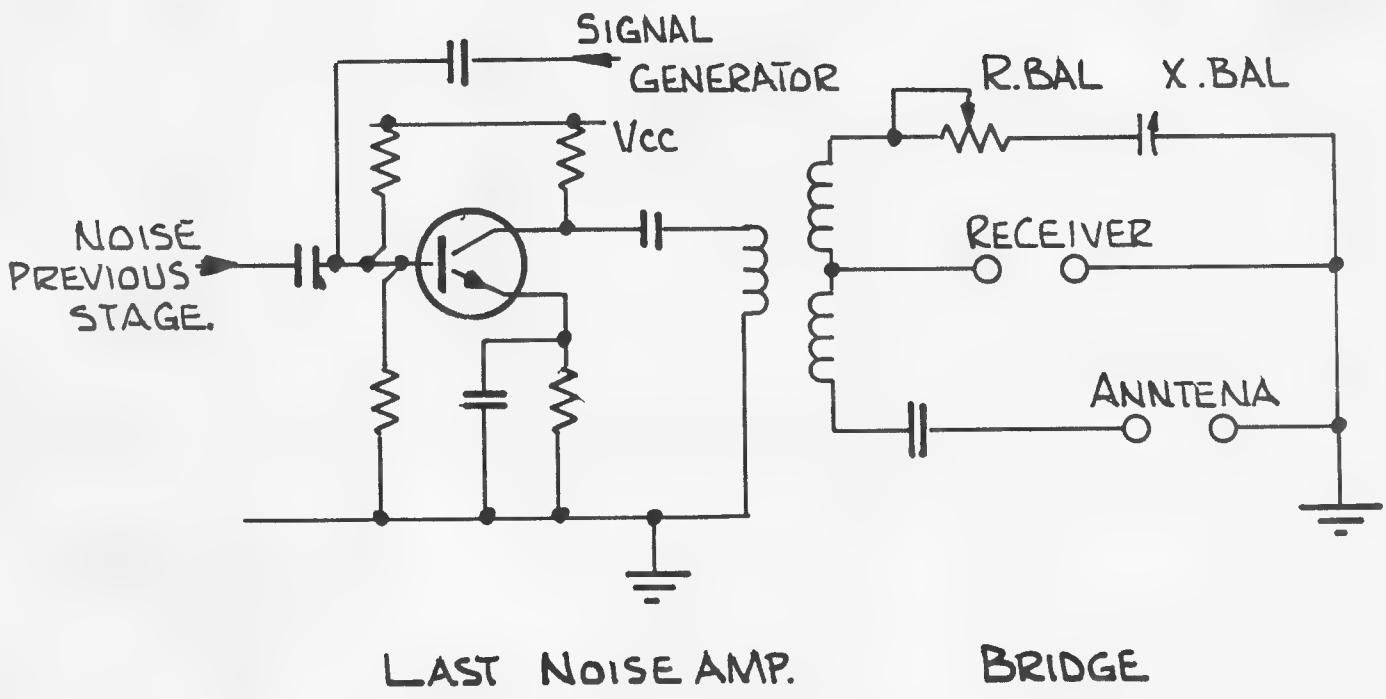


Figure 2: Injection of signal generator into the noise bridge.

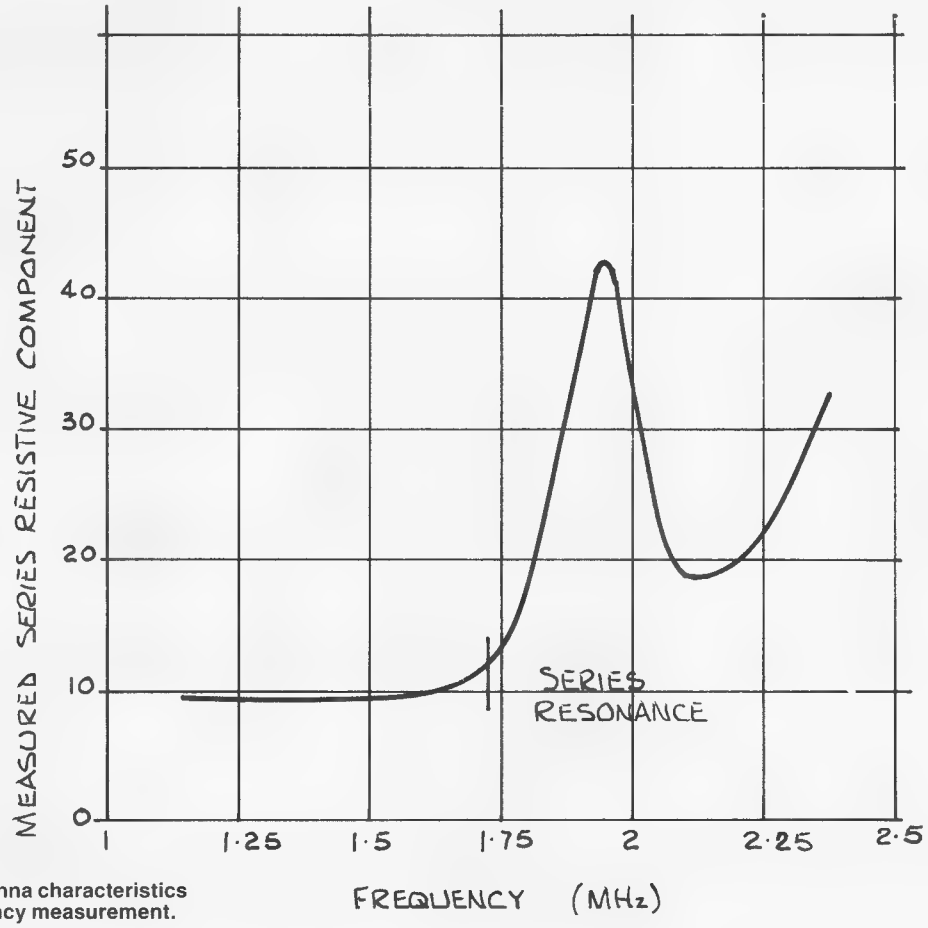


Figure 3: Sample antenna characteristics with extended frequency measurement.

Jacket Maker for the Commodore C64

Any computer owner or operator spends endless hours in seeking files from an accumulated mass of discs. This is how one amateur faced with the dilemma, ingeniously converted a printed program in a magazine to meet the parameters, he personally required.

*** See printout of this computer program on page 13.**

Bob Richards VK7NRR
PO Box 168, Launceston, Tas. 7270

After obtaining a disk drive for my Vic-20, the only way to display the directory on a disk cover was to list the directory to Print, cut it out and paste it onto the front of the disc cover.

That was alright if the disc was full, but if you had to reprint the directory after adding files to the disc, what did you do with the new one? Remove, or try to remove, the old one and paste the new one on! Give up in frustration!

Once I bought my C-64, things moved too fast for any of these methods, so I started hunting around for a program which would suit my requirements.

After many abortive attempts, VK5NEW told me of a program that appeared in the September 1986 edition of the magazine *COMPUTE*. Eric had already typed the program into his unit and gave me a copy whilst visiting Tasmania in November last year.

After using the program called *Jacket Lister*, it still did not suit my requirements fully.

Firstly it did not print the BLOCKS FREE on the jacket.

Secondly, what if I had programs on side two of the disc?

Thirdly, it was limited in size to 88 files per disc. (As we know, you can have up to 144 files per disc).

Fourthly, what if I wanted the disc jacket brightened up with something other than a listing. (I have both PRINTMASTER and PRINTSHOP).

After some thought I realised that the basic program could be altered to suit most, if not all, of my requirements. Then a friend suggested that I make provision for an MPS803 or an MPS1000, both capable of printing six or eight lines per inch.

With experimentation I concluded with five variations of the original program.

(1) Front cover — six lines per inch.
(2) Front cover — eight lines per inch.
(3) Back cover — six lines per inch.
(4) Back cover — eight lines per inch.
(5) Blank cover - for use with either PRINTSHOP or PRINTMASTER.

This arrangement was very cumbersome in operation because, if you were making a cover for both sides, it involved loading a second program.

After further thoughts on the matter, a program was developed which met all my requirements.

So, with due acknowledgment to the original author and the magazine for giving me the idea to develop the following program.

THE PRACTICAL SIDE

To make up the double-sided jacket, make the cover for side two first. Slip the original disc-cover inside and paste the two flaps of side one jacket over the side two jacket. If you desire, the flaps can be cut off and the front cover, with the listing, pasted over the back of the back cover. Some trimming may be necessary.

It is also advisable to have only enough files on side two to list on the top half of the cover. If you have programs listed on the bottom of side one, leave the bottom half loose and in storage it folds up behind the disc, out of the way.

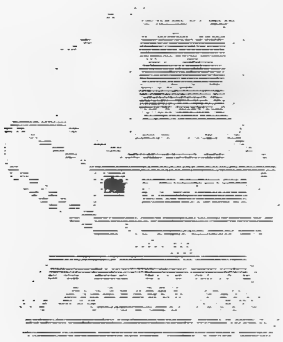
The number of files listable are:

Printed six lines/inch —
Top half side one — 16 Total 80
Top half side two — 20 Total 80
Printed eight lines/inch —
Top half side one — 24 Total 110
Top half side two — 30 Total 110

Good luck.

(Bob, has kindly volunteered that if you don't feel like typing the program into your computer, send him a blank disc and enough stamps to cover return postage and he will copy and return it to you. Tech Ed.)

Amateur Log Program for the Amstrad CPC612



Jim Oliver VK7JO
2 Luxmore Place, South Launceston, Tas. 7249

*** See printout of this computer program on page 14.**

A very useful program to check for a name, call sign or when and if you have had a previous contact.

This program is in fact a station log, controlled by a menu. The menu consists of:

(1) Enter call sign and information.
(2) List call sign and information. (This option displays the calls and information in successive pages of 15 calls.)
(3) Retrieve data from disc.
(4) Save data to disc.
(5) Search for a call. (This option displays multiple listings of a call sign which has been entered more than once.)
(6) Amend or delete information.

(Jim, has kindly offered to copy the program to a tape or disc. If you require a copy please send Jim a disc or cassette and stamps to pay return postage. Tech Ed.)

ADVERTISE YOURSELF AND/OR YOUR BUSINESS

Amateur Radio has been conducting a new advertising feature for those business people who have a message they want to publicise, yet do not want to place a large advertisement.

Send your business card to the Advertising Manager and it will be reproduced in the magazine, one column wide, for $25.00 per issue.

The Editor reserves the right to refuse any material that he considers unsuitable.

For further details contact:

**The Advertising Manager
PO Box 300,
Caulfield South, Vic. 3162**

Jacket Maker — Computer Program Printout

```
10 REM ** JACKET MAKER BY BOB RICHARDS, MARCH '87 **
20 DIMTB$(144),AB$(144)
30 POKE53280,13:POKE53281,9:PRINTCHR$(147)CHR$(158)
40 PRINTTAB(12)CHR$(17)"JACKET  LISTER"
50 FORI=1TO1000:NEXT
55 PRINTCHR$(17)"  DO YOU WANT A BLANK JACKET? (Y/N):"
60 PRINTCHR$(17)"  ";:INPUTY$
65 IFY$="Y"THEN590
70 PRINTCHR$(147)
75 PRINTCHR$(17)"  ENTER TODAY'S DATE (DD/MM/YY):"
80 PRINTCHR$(17)"  ";:INPUTDT$
90 PRINTCHR$(17)"  UPPER OR LOWER CASE? (U/L):"
100 PRINTCHR$(17)"  ";:INPUTCA$
110 IFCA$="U"THENSA=0
120 IFCA$="L"THENSA=7
130 PRINTCHR$(17)"  WHICH DISK DRIVE? (NO.):"
140 PRINTCHR$(17)"  ";:INPUTDN
150 PRINTCHR$(17)"  WHAT IS THE DISK NUMBER?:"
160 PRINTCHR$(17)"  ";:INPUTDS$
170 PRINTCHR$(17)"  WHICH SIDE? (A/B):"
180 PRINTCHR$(17)"  ";:INPUTS$
190 PRINTCHR$(147)CHR$(17)"  SOME COMMODORE PRINTERS CAN PRINT 8"
200 PRINT"  LINES PER INCH OF PAPER INSTEAD OF"
210 PRINT"  THE NORMAL 6 LINES PER INCH."
220 PRINTCHR$(17)"  WHICH WILL YOURS PRINT?:"
230 PRINTCHR$(17)"  ";:INPUTCH
240 PRINTCHR$(147)"■■■■■■■■■■■■"
250 PRINTTAB(4)CHR$(18)" READING DATA : PLEASE STAND BY "CHR$(146)
260 GOSUB1950:GOSUB2010
270 REM ** READ DIRECTORY **
280 OPEN8,DN,0,"$0":FORC=1TO8:GET#8,A$:NEXT:C=1:DN$="":FORC=1TO16
290 GET#8,A$:DN$=DN$+A$:NEXT:GET#8,A$:GET#8,A$:DN$=DN$+"  ":GET#8,A$
300 DN$=DN$+A$:GET#8,A$:DN$=DN$+A$:GET#8,A$:GET#8,A$
310 GET#8,A$:GET#8,A$:C=1
320 FORA=1TO4:GET#8,A$:NEXT:PN$="":TY$=""
330 GET#8,A$:IFST<>0THEN400
340 IFA$=""THEN400
350 IFASC(A$)<>34THEN330
360 GET#8,A$:IFASC(A$)<>34THENPN$=PN$+A$:GOTO360
370 GET#8,A$:IFASC(A$)=32THEN370
380 TY$=TY$+A$:GET#8,A$:IFA$<>""THEN380
390 TB$(C)=PN$:C=C+1:IFST=0THEN320
400 CLOSE8
410 IFCH=6ANDC>80ANDS$="A"THENGOSUB1780
420 IFCH=6ANDC>80ANDS$="B"THENGOSUB 1780
430 IFCH=8ANDC>110ANDS$="A"THENGOSUB1780
440 IFCH=8ANDC>110ANDS$="B"THENGOSUB1780
450 REM ** SORT LISTING **
460 PRINTCHR$(147)"■■■■■■■■■■■■"
470 PRINTTAB(4)CHR$(18)" SORTING DATA : PLEASE STAND BY "CHR$(146)
480 GOSUB1950
490 Z$="◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆":E=1:REM ** SHIFTED Z **
500 FORA=1TOC-1:C$=Z$:FORB=1TOC-1:IFC$<TB$(B)THEN520
510 C$=TB$(B):D=B
520 NEXT:AB$(E)=C$:E=E+1:TB$(D)=Z$:NEXT
530 REM ** JACKET NAME = JN$ **
540 JN$=" ●● REFERENCE.  "
550 REM ** PRINT JACKET **
560 PRINTCHR$(147)"■■■■■■■■■■■■"
570 PRINTTAB(2)CHR$(18)" PRINTING JACKET : PLEASE STAND BY "
580 GOSUB1950
590 DD=0:CD=INT(C/2) OPEN4,4,SR
600 FORCR=1TO2:PRINT#4,CHR$(10):NEXT:REM ** LINE FEEDS **
610 TL$="▂":REM ** LOGO O **
620 IFS$="B"THEN750
630 PRINT#4,TAB(2);:FORTL=1TO72:PRINT#4,TL$;:NEXT:PRINT#4," CUT"
640 GOSUB1600:GOSUB1620
650 GOSUB1600:IFY$="Y"THEN670
660 PRINT#4,CHR$(14)JN$DS$" ●●"CHR$(15);
670 GOSUB1620
680 FORLF=1TO2
690 GOSUB1600:GOSUB1630
700 NEXT
710 GOSUB1600 IFY$="Y"THEN725
720 PPINT#4,CHR$(16)"18"DN$SPC(1)BF"FREE"TAB(2)DT$CHR$(16)"64":
725 GOSUB1620:IFY$="Y"THEN905
730 IFCH=8ANDS$="B"THEN2170
740 GOTO2130
750 PRINT#4,TAB(10),:FORTL=1TO56:PRINT#4,TL$;:NEXT:PRINT#4," CUT"
760 GOSUB1600:GOSUB1620 GOSUB1600
770 PRINT#4,CHR$(14)JN$DS$" ●●"CHR$(15);:GOSUB1620
780 IFCH=8THEN2210
790 GOSUB1600 GOSUB1620
800 GOSUB2110
810 GOSUB1600
820 GOTO720
830 IFCH=6ANDS$="A"THEN870
840 IFCH=6ANDS$="B"THEN880
850 IFCH=8ANDS$="A"THEN890
860 IFCH=8ANDS$="B"THEN900
870 IFC>32THEN1160
880 IFC>40THEN1170
890 IFC>48THEN1180
900 IFC>58THEN1190
905 IFY$="Y"THENCD=17
910 FORDD=1TOCD GOSUB1600
920 PRINT#4,CHR$(16)"20"AB$(DD);
930 PRINT#4,CHR$(16)"40"AB$(CD+DD);:GOSUB1620
940 NEXT
950 GOSUB1600 GOSUB1620 DD=DD+1
960 IFCH=6ANDS$="A"THEN1000
970 IFCH=6ANDS$="B"THEN1010
980 IFCH=8ANDS$="A"THEN1020
990 IFCH=8ANDS$="B"THEN1030
1000 IFDD>17THEN1050
1010 IFDD>21THEN1050
1020 IFDD>25THEN1050
1030 IFDD>30THEN1050
1040 GOTO950
1050 GOSUB1680
1060 IFCH=6ANDS$="A"THEN1100
1070 IFCH=6ANDS$="B"THEN1110
1080 IFCH=8ANDS$="A"THEN1120
1090 IFCH=8ANDS$="B"THEN1130
1100 FORSL=1TO27:GOSUB1640:GOSUB1660 NEXT:GOTO1140
1110 FORSL=1TO23:GOSUB1640:GOSUB1660:NEXT:GOTO1140
1120 FORSL=1TO36:GOSUB1640:GOSUB1660:NEXT:GOTO1140
1130 FORSL=1TO31:GOSUB1640:GOSUB1660:NEXT:GOTO1140
1140 GOSUB1710
1150 GOSUB1740
1160 J=16:GOTO1200
1170 J=20 GOTO1200
1180 J=24 GOTO1200
1190 J=29
1200 FORDD=1TOJ:GOSUB1600
1210 PRINT#4,CHR$(16)"20"AB$(DD);
1220 PRINT#4,CHR$(16)"40"AB$(DD+J);:GOSUB1620
1230 NEXT
1240 GOSUB1600:PRINT#4,SPC(21)"*** MORE ***";:GOSUB1620
1250 GOSUB1680
1260 GOSUB1640:GOSUB1660
1270 IFCH=6ANDS$="A"THENG=33:GOTO1310
1280 IFCH=6ANDS$="B"THENG=41:GOTO1320
1290 IFCH=8ANDS$="A"THENG=49:GOTO1330
1300 IFCH=8ANDS$="B"THENG=59:GOTO1340
1310 H=32:GOTO1350
1320 H=40:GOTO1350
1330 H=48:GOTO1350
1340 H=58
1350 CX=(C-G)/2:CZ=CX+H
1360 FORDE=GTOCZ GOSUB1640
1370 PRINT#4,CHR$(16,"20"AB$(DE),
1380 PRINT#4,CHR$(16)"40"AB$(DE+CX);:GOSUB1660:DD=DD+1
1390 NEXT
1400 GOSUB1640 GOSUB1660:DD=DD+1
1410 IFCH=6ANDDD=43THEN1430
1420 IFCH=8ANDDD=59THEN1430
1425 GOTO1400
1430 GOSUB1710 GOSUB1740
1440 REM ** CLOSING REMARKS **
1450 PPINTCHR$(147)"■■■■■■■■■■■■"
1460 PRINTTAB(9)CHR$(18)" DISK COVER COMPLETE "CHR$(146)
1470 GOSUB1950
1480 PRINTCHR$(17)"  DO YOU WANT ANOTHER JACKET (Y/N):"
1490 PRINTCHR$(17)"  "; INPUTAG$
1500 FOPDD=0TO144:AB$(DD)="":NEXT
1510 IFAG$<>"Y"THEN1530
1520 GOTO30
1530 PRINTCHR$(147):POKE53280,2:POKE53281,2
1540 PRINTCHR$(147)"■■■■■■■■■■■■"
1550 PRINTTAB(8)CHR$(18)" PROGRAM TERMINATED ! "CHR$(146)
1560 GOSUB1900
1570 FORWT=1TO1000:NEXT
1580 PRINTCHR$(147)CHR$(154):POKE53280,14:POKE53281,6 END
1590 REM ** SUBROUTINES**
1600 REM ** LEFT TOP MARGIN **
1610 PRINT#4,"  ▌        ▌*";:RETURN:REM LOGO J LOGO G
1620 REM ** RIGHT TOP MARGIN **
1630 PPINT#4,CHR$(16)"64* ▌        ▌":RETURN:REM LOGO M LOGO L
1640 REM ** LEFT BOTTOM MARGIN **
1650 PRINT#4,"           ▌",:RETURN:REM LOGO J
1660 REM ** RIGHT BOTTOM MARGIN **
1670 PRINT#4,CHR$(16)"65▌":RETURN:REM LOGO L
1680 REM ** FOLD LINE **
1690 FL$="▔":REM SHIFTED D
1700 PRINT#4,TAB(2);:FORFL=1TO72:PRINT#4,FL$;:NEXT:PRINT#4," FOLD":RETURN
1710 REM ** BOTTOM LINE **
1720 BL$="▁" REM ** LOGO Y
1730 PRINT#4,TAB(10);:FORBL=1TO56:PRINT#4,BL$;:NEXT:PRINT#4," CUT":RETURN
1740 REM ** PAGE FEED **
1750 PRINT#4:FORPF=1TO3
1760 PRINT#4,CHR$(10)
1770 NEXT:CLOSE4:GOTO1440
1780 REM ** TOO MANY PROGRAMS **
1790 PPINTCHP$(147) POKE53280,2:POKE53281,2
1800 PRINTCHR$(147)"■■■■■■■■■■■■"
1810 PRINTTAB(9)CHR$(18)" TOO MANY PROGRAMS "CHR$(146)
1820 PPINTTAB(9)CHR$(18)" TO LIST ON JACKET "CHR$(146)
1830 GOSUB1900
1840 FOPI=1TO1000:NEXT POKE53280,13:POKE53281,9
1850 PRINTCHR$(17)" PRINT THOSE THAT FIT? (Y/N):"
1860 PPINTCHR$(17)"  ";:INPUTLS$
1870 IFLS$<>"Y"THEN1530
1880 IFCH=6THENC=88 RETURN
1890 C=110 RETURN
1900 PEM ** BUZZER **
1910 POKES,240
1920 H=54273 S=54278 W=54276:V=54296
1930 POKEV,15 POKEH,5 POKEW,33:FORT=0TO500:NEXT
1940 FOPT=H-1TOV POKET,0:NEXT:RETURN
1950 PEM ** BELL **
1960 H=54273 S=54278 W=54276 V=54296
1970 FORAA=1TO3
1980 POKEV,15:POKEH,40 POKES-1,9:POKEW,17:FORT=1TO500:NEXT
1990 FORT=H-1TOV:POKET,0:NEXT
2000 NEXT:RETURN
2010 PEM ** READ BLOCKS FREE **
2020 OPEN15,8,15,"I0" OPEN2,8,2,"#"
2030 PRINT#15,"B-R":2;0;18,0
2040 BF=0
2050 FOPI=4TO140STEP4
2060 IFI=72THEN2100
2070 PRINT#15,"B-P",2;I
2080 GET#2,X$:IFX$=""THENX$=CHR$(0)
2090 BF=ASC(X$)+BF
2100 NEXT:CLOSE2:CLOSE15 RETURN
2110 PEM ** SHOULDERS FOR SIBE B/6 **
2120 PRINT#4,CHR$(16)"02▁▁▁▁▁▁▁▁▌*";CHR$(16)"64* ▌▁▁▁▁▁▁▁ CUT":RETURN:REM LOGO @
2130 REM ** UNDERLINE **
2140 PRINT#4,"  ▌        ▌*";
2150 PRINT#4,CHR$(16)"18▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁";
2160 PRINT#4,CHR$(16)"64* ▌        ▌":GOTO830
2170 PEM ** SHOULDERS FOR SIDE B/8 **
2180 PPINT#4,"  ▁▁▁▁▁▁▁ ▌*"
2190 PRINT#4,CHP$(16)"18▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁▁";
2200 PRINT#4,CHR$(16)"64* ▌▁▁▁▁▁▁▁ CUT":GOTO830
2210 PEM ** LINE FEED **
2220 FORLF=1TO2:GOSUB1600:GOSUB1620:NEXT
2230 IFCH=8THEN810
2240 GOTO710
```

Amstrad CPC612 — Computer Program Printout

```
10 REM SET UP MENU
20 MODE 2:INK 0,13:INK 1,0
30 c=0:r=0
40  DIM cs$(500), info$(500)
50 c$="Callsign":i$="Imformation"
60 WINDOW 1,80,1,25:CLS
70 LOCATE 18,2
80 PRINT "*** AMATEUR RADIO STATION IMFORMATION ***"
90 LOCATE 27,4:PRINT "- Jim Oliver  VK7JO -"
100 LOCATE 33,6:PRINT "-- MENU --"
110 LOCATE 24,9:PRINT"1. Enter callsign and info."
120 LOCATE 24,11:PRINT "2. List callsigns and info."
130 LOCATE 24,13:PRINT "3. Retrieve from disc"
140 LOCATE 24,15:PRINT "4. Save to disc"
150 LOCATE 24,17:PRINT "5. Search for a call "
160 LOCATE 24,19:PRINT "6. Amend or delete"
170 LOCATE 24,25:INPUT"Enter menu selection";ms
180 CLS
190 ON ms GOSUB 230,540,750,840,940,1080
200 GOTO 50
210 IF INKEY$="" THEN 210
220 REM ENTER CALLS AND INFO
230 WINDOW 1,80,1,25:CLS
240 PRINT SPC(25)"-- Imformation entry --"
250 PRINT c$,i$
260 WHILE c<500
270 r=c+1
280 WINDOW 1,80,11,14
290 k$=""
300 PRINT "Record number ";r:PRINT SPC(22)"Use
    UPPER CASE for CALLSIGN"
310 PRINT SPC(22)"Limit imformation to one line"
320 WINDOW 1,80,5,9
330 PRINT SPACE$(160)
340 LOCATE 1,2
350 LINE INPUT:cs$(c)
360 LOCATE 14,2
370 LINE INPUT;info$(c)
380 WINDOW 1,80,17,25
390 PRINT SPC(22) "Press <ENTER> if data is correct"
400 PRINT:PRINT SPC(22) "If not press <SPACE> bar"
410 PRINT:PRINT SPC(22) "If END of LIST press <E> key"
420 WHILE k$<>CHR$(13) AND k$<>CHR$(69) AND k$<>CHR$(32)
430 k$=INKEY$:k$=UPPER$(k$)
440 WEND
450 CLS
460 IF k$=CHR$(13) GOTO 500
470 IF k$=CHR$(69) GOTO 490
480 IF k$=CHR$(32) GOTO 260
490 c=499
500 c=c+1
510 WEND
520 RETURN
530 REM LIST CALLS AND INFO
540 CLS
550 PRINT c$,i$
560 WINDOW 1,80,3,18
570 c=0
580 WHILE c<r
590 PRINT cs$(c),info$(c)
600 page=c MOD 14
610 IF page = 0  AND c>0 THEN GOSUB 1300
620 IF page = 0  AND c>0 THEN WINDOW 1,80,3,18:CLS
630 c=c+1
640 WEND
650 WINDOW 8,80,20,23
660 PRINT TAB(23)"End of list"
670 GOSUB 1300
680 RETURN
690 WINDOW 1,80,25,25
700 CLS
710 PRINT TAB(8)"Press any key to continue"
720 k$=INKEY$:IF k$="" THEN 720
730 RETURN
740 REM RETRIEVE INFO FROM DISC
750 OPENIN "data"
760 WHILE EOF = 0
770 INPUT#9,cs$(c),info$(c)
780 c=c+1
790 WEND
800 CLOSEIN
810 r=c
820 RETURN
830 REM SAVE INFO ON DISC
840 OPENOUT "data"
850 c=0
860 WHILE c<r
870 PRINT#9,cs$(c)
880 PRINT#9,info$(c)
890 c=c+1
900 WEND
910 CLOSEOUT
920 RETURN
930 REM SEARCH FOR A CALLSIGN
940 cs$="zz":f=0
950 LOCATE 20,3
960 INPUT "Enter callsign to search for";cs$
970 cs$=UPPER$(cs$)
980 LOCATE 1,8:PRINT c$,i$
990 WINDOW 1,80,10,21
1000 c=0
1010 WHILE c<r
1020 IF cs$=cs$(c) THEN f=1:PRINT cs$,info$(c)
1030 c=c+1
1040 WEND
1050 IF f<>1 THEN LOCATE 25,8:PRINT"Callsign not found"
1060 GOSUB 1350
1070 REM AMEND CALLSIGN AND IMFO
1080 CLS
1090 cs$="zz":f=0
1100 LOCATE 20,3
1110 INPUT "Enter callsign to amend";cs$
1120 cs$=UPPER$(cs$)
1130 LOCATE 1,9
1140 PRINT "   "c$,i$
1150 WINDOW 1,80,10,21
1160 c=0
1170 WHILE c<r
1180 IF cs$=cs$(c) THEN f=1 :PRINT: PRINT c;cs$,info$(c)
1190 c=c+1
1200 WEND
1210 IF f <> 1 THEN LOCATE 25,8:PRINT "Callsign
     not found":GOTO 1350
1220 WINDOW 1,80,22,24
1230 INPUT"Input number of callsign you want to amend";n
1240 CLS:PRINT "Retype the whole record"
1250 WINDOW 1,80,10,21 :CLS
1260 PRINT n;cs$(n),info$(n)
1270 LOCATE 2,4:INPUT cs$(n)
1280 LOCATE 12,4:INPUT;info$(n)
1290 GOTO 50
1300 WINDOW 1,40,25,25
1310 CLS
1320 PRINT TAB(8)"Press any key to continue"
1330 k$=INKEY$:IF k$="" THEN 1330
1340 RETURN
1350 WINDOW 1,80,25,25
1360 CLS
1370 PRINT TAB(8) "Press any key to continue"
1380 k$=INKEY$:IF k$="" THEN 1380
1390 GOTO 50
```

HOW WOULD YOU FARE ? ? ?

COMMONWEALTH OF AUSTRALIA
POSTMASTER-GENERAL'S DEPARTMENT
FIRST AND SECOND CLASS AMATEUR OPERATOR'S CERTIFICATES OF PROFICIENCY

SECTION K (Regulations) **APRIL 1947**

Time allowed — 30 minutes
NOTE — Three questions only to be attempted.

1 What are the regulation requirements regarding the sending of test signals from an Experimental station?

2 What steps must be taken by an experimental station licensee to ensure that his transmitter operates within the frequency bands allotted for experimental use?

3 When desiring to establish communication with another station what requirements must be met in regard to:
(a) adjustments to receiver and transmitter before commencing to call,
(b) duration of time between calls.
(c) manner of making a call in (i) CW and (ii) Telephony.

4 What comprises the distress signal in Telegraphy and Telephony?

5 For what purposes is an experimental licence issued?

ar

A Free-Standing Tilt-Over Mast

Allan Carman VK3AQH
PO Box 287, Warrnambool, Vic. 3280

An antenna with no guy wires and a small amount of concrete.

This mast was recommended to me by Peter VK3FX, who helped construct and erect it. It requires no guy wires, a small amount of concrete and will be 35 feet or 36 feet tall (about 11 metres).

PARTS LIST

Galvanised Bolts (Hexagonal Head)
1 only — 6" x ½" w/nut (150 x 12 mm)
2 only — 1½" x ½" w/nut and washer (40 x 12 mm)

Galvanised Pipe, unthreaded, medium grade
2 only — 3" diam 21'6" long (80 NB 6.6 m)
1 only — 2½" diam 7'0" long (65 NB 2.1 m)
1 only — 2½" diam 4'6" long (50 NB 1.4 m)
1 only — 1½" diam 3'6" long (40 NB 1.1 m)
1 only — 1½" diam 1'6" long (40 NB 0.5 m)

Mild Steel Plate (⅜" or 10 mm thick)
2 only — 2" x 1½" (50 x 40) (Part "A")
2 only — 7" x 1½" (50 x 40) (Part "A")
2 only — 4" x 1½" (100 x 40) (Part "C")
2 only — 5" x 1½" (130 x 40) (Part "D")
2 only — 6½" x 3" (170 x 35) (Part "E") (¼" or 6 mm)

Sundries
1 bag — Cement
Small quantity — Crushed Stone (not coarse)
Welding Rods (gor galvanised steel)
1 only — Turned Wooden Reel
Small tin — Metal Primer
About 60 feet — Manila Rope, (¾" diam)

First prepare the pieces of steel plate. Pieces "B" have both ends cut at 45 degree angles, and pieces "C", "D" and "E" all have a half inch hole drilled at one end, with these corners rounded and the ends lightly dressed.

Next take one length of three inch diameter pipe called "F" in Figure 1. It must be a good straight piece. At one end weld piece "A" flush with the end, with the other "A" piece welded directly opposite. Chip clean, double weld and chip again — this procedure applies to all welded areas.

Next, weld piece "C" in place to project 2" followed by a second piece "C" opposite, using the six inch bolt to help align this piece. Paint primer on all these welded pieces and joints.

Take the second piece of straight three inch pipe and insert the piece of two and a half inch diameter pipe for about 10 inches. Using shim metal, even three or four inch nails, carefully align with the main piece, tack weld, and check the alignment before completing the double welding. Repeat this procedure to insert the two inch diameter pipe about eight inches down into the two and a half inch pipe, and the longer piece of one and a half inch diameter pipe about six inches into the two inch pipe. Chip and prime all joints. This is part "T" in the diagram — it must be perfectly straight.

Lay the two lengths of mast on a flat surface, parallel to each other and touching, but with one length protruding six and a half feet beyond the other as in Figure 2. Using a one and a half inch by half inch bolt, place piece "D" in position as indicated in Figures 2 and 3. Tack and weld in place. With the help of an assistant, turn the two mast sections 90 degrees so that part "T" now lies on top of part "F" enabling the second piece "D" to be placed into position with a bolt and tacked into place.

Ensure that the long pieces of the mast, "F" and "T" are truly aligned, then double weld the two "D" pieces, followed by bracing them with parts "B" which must be above "D" to allow for free-tilting of the mast later. (See Figure 3).

With "F" and "T" now correctly aligned, pieces "E" are welded at the bottom end of "T" using the six by half inch bolt to help position them. (See Figure 3).

Remove all bolts and double check that all mild steel and welded joints are chipped and primed. Other paint can now be applied if desired.

Excavate a hole at the proposed site, remembering that both ends of the mast must have room to travel, including rotator and antenna. Begin with a hole two feet three inches in diameter, nine inches deep and at its centre use a long-handled post-hole shovel to dig a hole as narrow as possible with a total depth of four feet six inches below ground level — this is not easy. Finally, undercut the bottom as much as possible using a hoe, cultivator, etc. Now mix enough concrete, three-to-one mix, to fill this undercut only. Stand the base pipe "F" upright in the middle of the small diameter hole, ensuring Plates "C" are correctly aligned for future tilting. Prop in position with temporary wooden stays, ensuring that it is vertical by using a long spirit level. Wait four days and fill the small diameter hole with sand only; do not use soil or concrete, and ram the sand as you fill. Now the nine inch hole at the top is filled with concrete which can be given a slight fall-away from the mast for drainage. Allow at least a week for the concrete to cure and remove the stays.

Tie a temporary rope to piece "T" at the junction of the two and two and a half inch pipes so that the mast can be tilted later until its antenna is fitted, when it becomes top-heavy and is then able to be lowered by just using the 60 feet piece of manila rope as a brake.

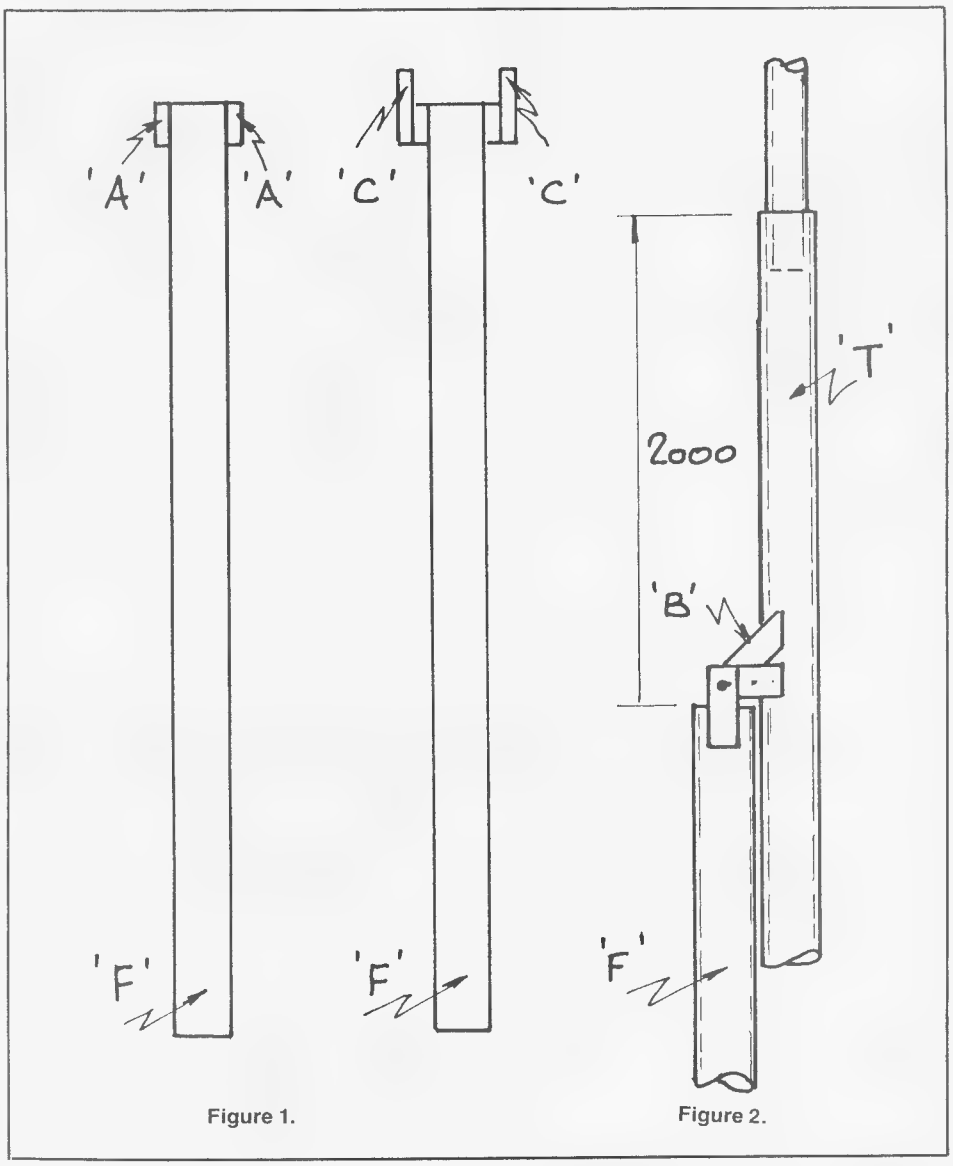
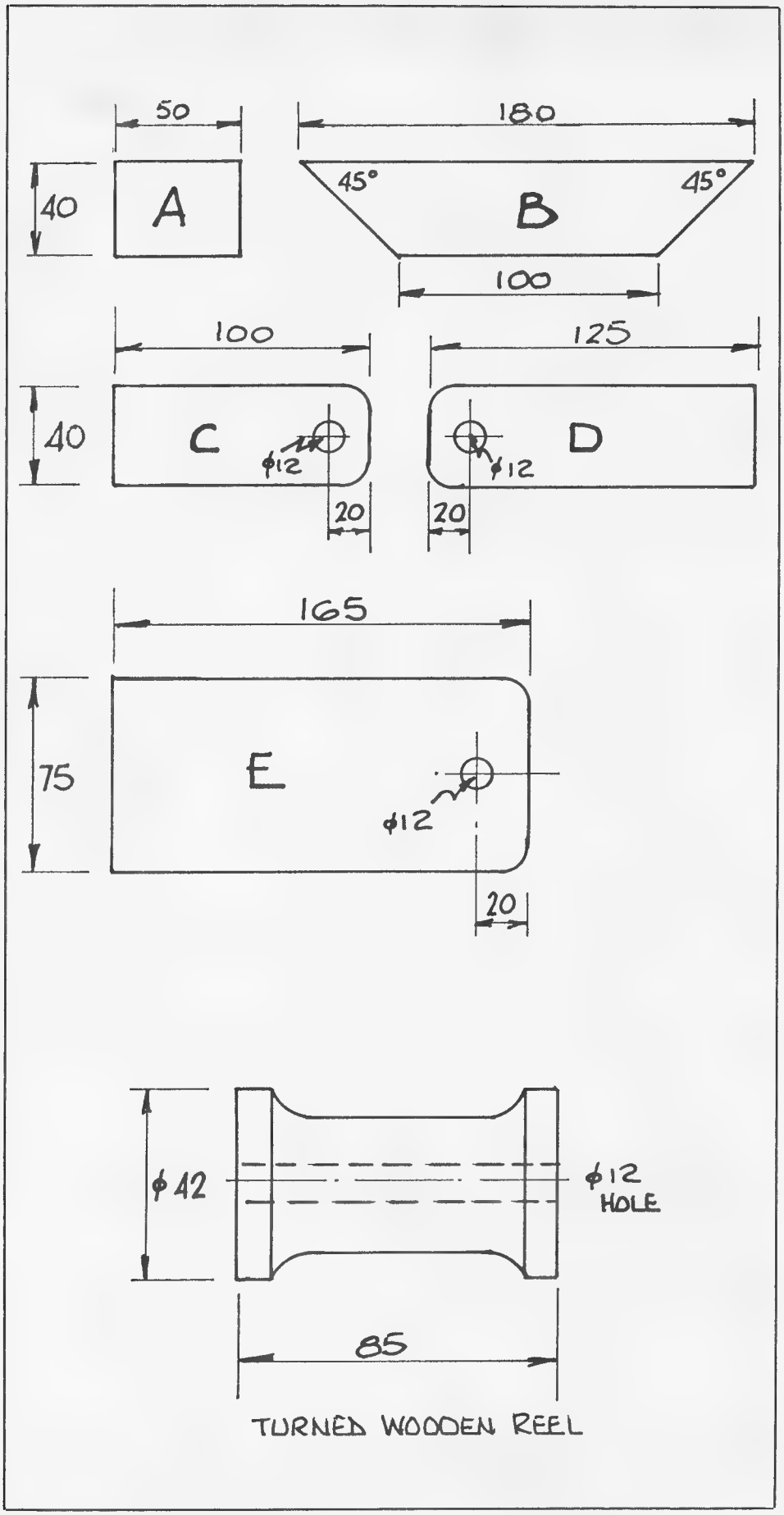


Figure 1. Figure 2.



One person now climbs a ladder leaning against the fixed part of the mast, taking the one and a half inch bolts with them whilst another person or two stand the long section upright near the fixed base pipe until it is standing against this fixed pipe. It is now lifted vertically and the bolts are inserted by the ladder-person and washers and nuts applied. During this procedure the ground-people hold the long pipe against the fixed base. They next slip the six inch bolt into place through the "E" pieces.

To tilt the mast, the sixty foot piece of manila rope is first wrapped seven times around the fixed base, as in Figure 4, and tied. Place a shoulder against the mast, remove the six inch bolt, tilt the mast slightly towards you so you may pass a U-shaped rope loop over the wooden pulley, which is fixed between the "E" pieces by the six inch bolt and nut. An assistant pulls on the other temporary rope tilting the mast while the operator feeds the manila rope over the pulley and around the mast, as in Figure 4. Tie the temporary rope down firmly when the thin end of the mast is at the desired level, for clamping the rotator and the short piece of one and a half inch pipe into place. Next attach the control cable and coaxial cable to the side of the mast — you can wrap PVC cable around at each point of attachment, then use half inch metal straps over the tape.

Clamp the antenna in place, making sure it points as shown on the rotator indicator, then complete rotator and antenna connections. The temporary rope is removed — you should always attach it when loosening or removing the antenna. The antenna may be tuned quite close to the ground.

To raise the antenna and mast, haul the manila rope around the mast — it is better for the rope to travel on the pad of seven turns of rope which are already around the base, especially when lowering the mast. When the tilting piece is hard against the base piece, lean against it while you remove the six inch bolt, allowing the pulley and rope to drop clear. Push with the shoulder until the "E" pieces embrace the fixed base and re-insert the six inch bolt and nut.

When you wish to lower your antenna, one person prepares the manila rope as in Figure 1, leans against the mast, removes the six inch bolt, tilts the mast slightly towards them, put the rope, pulley and six inch bolt back into position as in Figure 4. Pass the rest of the rope around the "friction pad" of rope on the base pipe and hold it firmly while tilting commences, feeding the rope slowly until the antenna is at the desired position when the rope is tied off around the base of the mast. You can use a single X- shaped wooden support near the rotator to take the strain off your rope — it will help steady the antenna.

Other tips are:

1 Raise or lower the antenna as steadily as possible — avoid jerking to lesson strain on the antenna and rotator parts.
2 Check the nuts on the one and a half inch bolts frequently — they tend to loosen with tilting. Do not substitute a single long bolt.
3 Tie-down the tilted mast with temporary rope when loosening the rotators or antenna clamps.
4 Neither Peter VK3FX, or I have guy-wires on our masts — if you must use them, attach to the fixed base pipe, below the pivots.

(NOTE: The design of this mast has been assessed for strength by a technical editor. It should be able to withstand winds of over 100 km/h without an antenna, but this reduces to under 90 km/h with a typical 20 metre beam fitted. No responsibility is taken for the accuracy of these calculations. Check with your local council as to their requirements.)

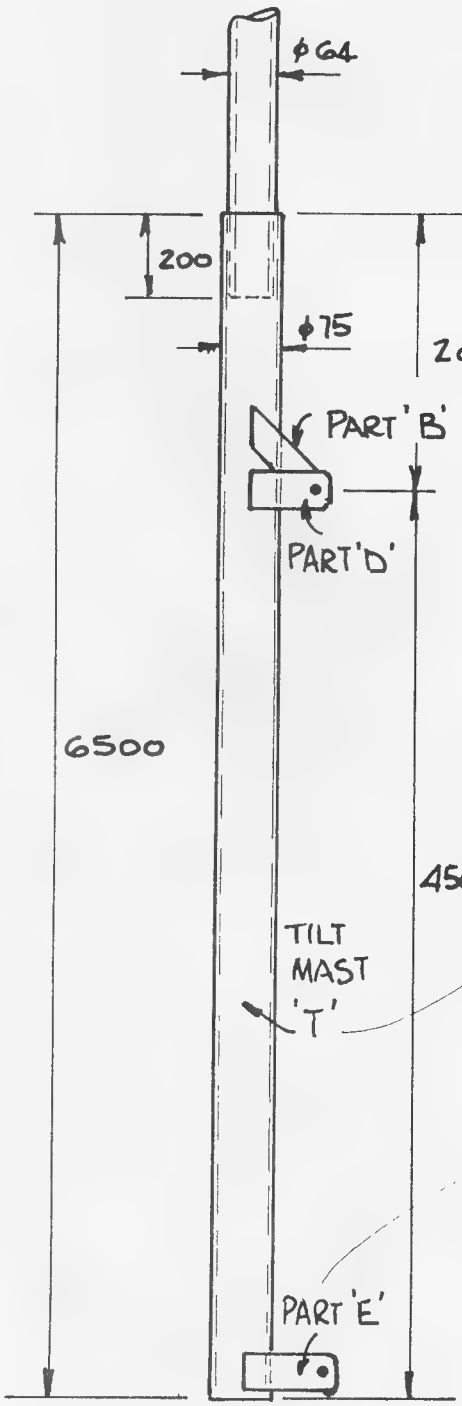


Figure 3.

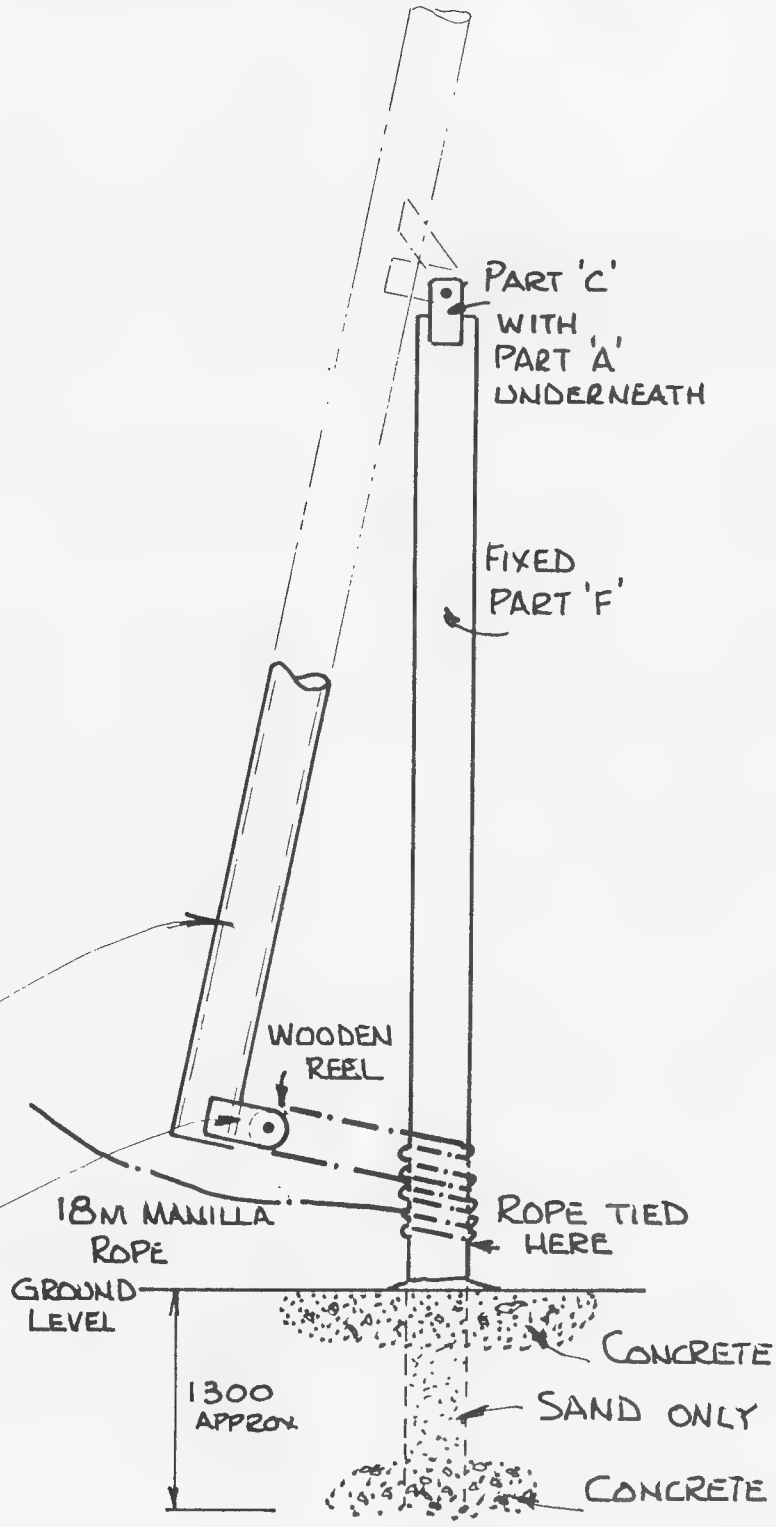


Figure 4.

THE VK3AUU YAGI DESIGN

David Tanner VK3AUU
Korumburra Road, Drouin South, Vic. 3818

A developing interest in Moonbounce has kindled a fresh desire to search for the ultimate in antenna design.

For many years the author has had a need for high gain antennas for VHF and UHF, having often lived in out of the way places where the nearest station was hundreds of kilometres away. In more recent years a developing interest in moonbounce has kindled a fresh desire to search for the ultimate in antenna design. An article by Gunther Hoch DL6WU, seemed to be the very sort of thing needed. The design currently produces the highest known gain for a given boom length, increasing about 2.35 dB each time the boom length is doubled and it seems to work for boom lengths from about one wavelength up. At that length, the gain is about 9.2 dBd. In addition to that, the impedance of the driven element is 50 ohms so that a 4:1 balun and a folded dipole gives a very good impedance match without any adjustment and, according to DL6WU, the bandwidth is four percent at the -1 dB point.

The prospect of reading figures from a graph seemed to be a messy way of going about the job of determining the lengths of all the directors. However, about a year ago I received a computer program, written by VK4ZF, with modifications by various others, which seemed to have something to offer with regard to the DL6WU design. Instead of a graph, it used a look-up table for elements of various diameters. The drawback with this was that, if you wanted to use elements of different diameters than those in the table, there was some error in the computed lengths. I now had a table to work from so I set about determining what I hoped would be a simple equation which would enable me to plot director number against director length, assuming a constant element diameter. A suggestion was made to me by my mathematics lecturer from GIAE that it looked like an equation of the form

$$y = a + be^{-kt}$$

would fit the curve. This did turn out to be the case. In addition to that, it was also possible to determine the length of a given director as its diameter was varied. As a result of much trial and error, an algorithm was finally arrived at which gave the length of any director of the DL6WU design as a function of element diameter with quite small errors over the range of diameters from .003 to .2000 wavelengths and out to at least 40 directors. The fit is very good at .003 which is about 6.25 mm on two metres. The final algorithm is as follows, with all dimensions in wavelengths:

$$L = .5179 - .4328\, d^{.2078} + (.007344 + .1794\, d^{1996})\, e^{-.07586\, N}$$

where

L = Length of Director N
d = Director Diameter
e = 2.718285

Reflector Length = 1.12 x Director 1
Driven Element = 1.066 x Director 1

The original article by DL6WU also included a table which gave a correction for the length of elements which pass through a metal boom. This reduces to quite a simple formula with dimensions also in wavelengths.

$$C = 12\, D^2 + .15\, D$$

where
C = Length to be added
D = Boom Diameter

If C is greater than two-thirds of the boom length, then use a correction of

$$C = 2\, D / 3$$

I would suggest that a folded dipole driven element is used, in which case the total length should be twice that shown, plus one boom correction. Feed impedance will be 200 ohms.

Now all that remained was for me to build an antenna for two metres and see how it performed. The final result is a 19 element Yagi with a total boom length of 11.73 metres. The boom is 40 mm diameter with 1.6 mm wall thickness made from two six-metre lengths spliced in the middle. The elements are 6.35 mm diameter. The boom was drilled slightly undersize and the holes reamed to a good fit. After marking the elements 20 mm each side of the mid-point, the elements were given a slight squeeze with a pair of adjustable pliers where they go through the boom. The elements were then tapped through past the first squeeze, twisted 90 degrees and then tapped the rest of the way. This made then a very tight fit in the boom. Care should be taken with this operation not to put nicks in the elements as subsequent vibration caused by the wind will fatigue at any such nicks. The mast is continued up about a metre above the boom and a wire stay is run to each part of the boom about two-thirds of the way out. The boom to mast clamp is made using four muffler clamps and a 150 mm square plate of six millimetre steel. A commercial masthead preamplifier was installed at the top of the mast 12 metres from the ground and connected to the transmitter through 25 metres of 10 DFB coaxial cable.

The design was as follows:

Frequency MHz	144.100
Wavelength mm	2082
Boom Diameter mm	40
Element Diameter mm	6.3
Elements through Boom	Yes
Boom Correction mm	15
Reflector Length mm	1057
Reflector Spacing mm	500
Driven Element mm	1008

Director Number	Length mm	Spacing λ	Spacing mm	Boom Length mm	Gain dBd
1	946	.075	156		
2	937	.180	375		
3	929	.215	448		
4	921	.250	520		
5	914	.280	583		
6	907	.300	625		
7	901	.315	656		
8	896	.330	896		
9	890	.345	718	5267	12.6
10	885	.360	749	6017	13.1
11	881	.375	781	6797	13.5
12	877	.385	802	7599	13.9
13	873	.390	812	8411	14.2
14	869	.395	822	9233	14.5
15	866	.400	833	10066	14.8
16	863	.400	833	10899	15.1
17	860	.400	833	11731	15.4

The length can be cut off anywhere from director nine onwards. Subsequent directors from 15 onwards are all spaced 0.40 wavelengths. The gain figures may seem low compared to some commercially designed antenna claims, but, believe me, they are the best you can get for the boom length and are in genuine dBd.

Stacking two antennas should yield another 2 dB.

The results with this antenna have been quite outstanding with the most successful contact to date being on CW with W5UN on 144.008 MHz off the rising moon in late October 1986. The strength of the signals shows that the predicted gain of 15.5 dBd is easily being met. It is now possible to hear the Mount Gambier beacon on 144.550 MHz, 90 percent of the time while the Canberra beacon on 144.410 fades in and out of the noise most of the time. Early morning scheds with VK5BVT, in the Adelaide Hills on 144.100 SSB are successful quite often, and scatter signals from VK2ZAB in Sydney are generally readable on peaks. Another array consisting of four or these Yagis is currently under construction at this QTH, with horizontal spacing of 4.58 metres and vertical spacing of 4.12 metres.

The author has also built a 70 cm Yagi of this design with 33 elements on a tapered boom approximately eight metres long. This single Yagi with a GaAsFET preamplifier mounted on the boom near the driven element has been used to copy CW from K2UYH, off the moon and enables SSB QSOs with VK5NC, in Mount Gambier to be made any time. Four of these Yagis and a pair of 4CX250Bs should make a usable EME station.

References:

1HOCH G, DL6WU. *More Gain with Yagi Antennas.* VHF Communications 4/1977
2HOCH G, DL6WU. *Extremely Long Yagi Antennas.* VHF Communications 3/1982
3POWLISHEN S, K1FO. *Stacking Yagis is a Science.* Ham Radio, May 1985

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Overhauling the TH3 Tri-Band Beam

Desmond Greenham VK3CO
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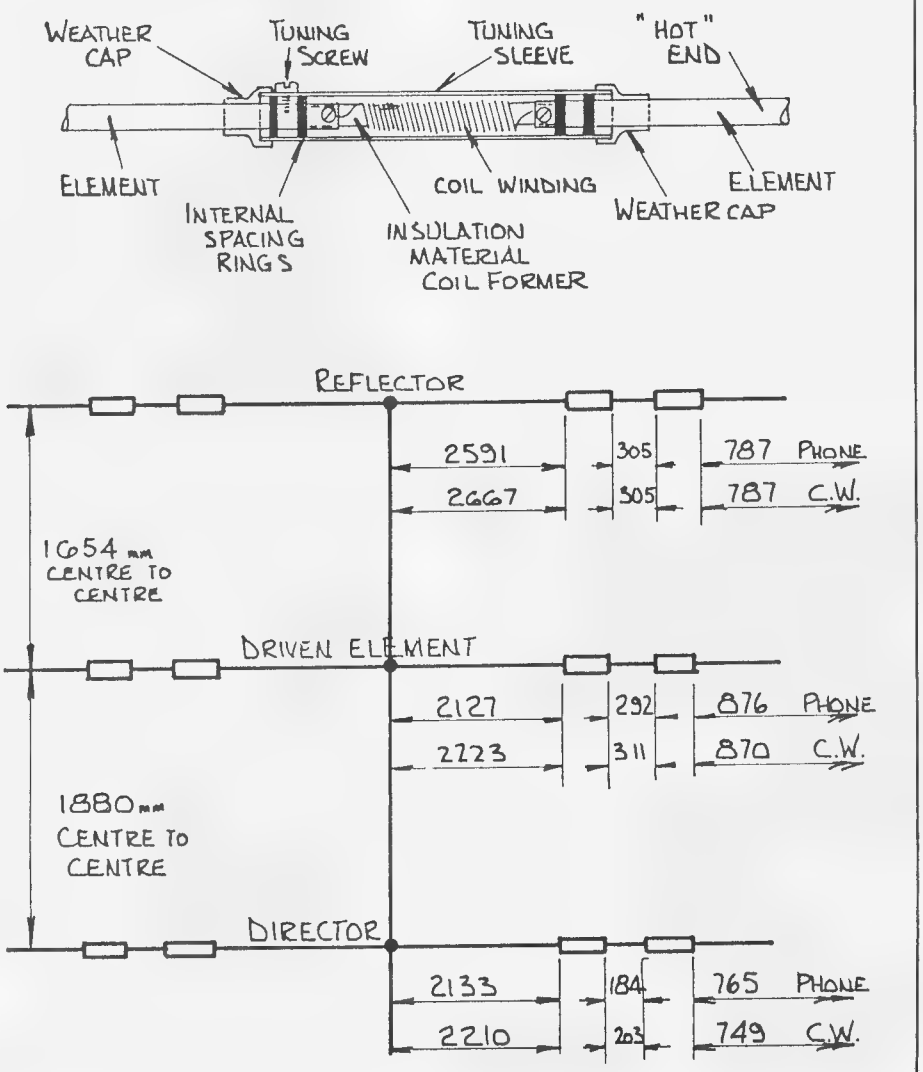
The traps were open at each end allowing water to enter.

Perhaps one of the most popular beams in recent years has been the famous TH3-Junior, made by Hi-Gain, USA. This beam is designed to operate on 10, 15 and 20 metres with a reasonable gain and yet is not too big for the average suburban backyard. Its gain is claimed to be around 8 dB and this, combined with a good front-to-back ratio, makes the beam most attractive. Many were purchased over the last 12 years including one that has done sterling service at this location. But in recent times it has been noticed that after a shower of rain the SWR along with the performance changes dramatically. The SWR goes up and the performance goes down! ! !

Figure 1: TH3-JR Dimensions in millimetres. (Measurements to end of tuning sleeve of trap).

From Hi-Gain Pamphlet



Peering at the beam through binoculars showed that the trap ends were, in some cases, not on the traps at all and were, in fact, quite removed from the trap and hanging loose on the elements. The beam was dropped.

An inspection revealed that the plastic ends were perished and split — no doubt due to the Australian sun. This left the traps open at each end allowing water to enter, thus ruining the tuning etc. Replacement caps are available but their life span is doubtful and they are very costly. So, some other alternative was necessary.

The ends of the traps could be sealed with silicone sealer but this idea was not attractive because of possible detuning effects and the difficulty of opening the traps at a later time. The idea of using electricians shrink- tubing was tried and proved to be most effective. Several sizes and various colours are available.

The size chosen was 33 mm. This will shrink to half its original size when heated over a flame. Prior to fitting the ends each trap was dismantled and the collection of dust, spiders, bugs, etc removed. The coil was inspected and cleaned. Connections were tightened. The tuning shield was replaced and prior to fitting the ends, the resonant frequency was checked with an accurate Dip Oscillator. Coupling was made to the GDO with a short piece of wire from the hot-end of the trap around the coil of the GDO. This enabled enough coupling to establish a dip and the frequency was checked. The 10 metre traps resonated at 28 MHz and the 15 metre traps at 21 MHz. There was no detuning due to the fitting of the new ends.

To fit the ends the procedure went like this.

Firstly, clean the trap surface with steel wool to remove corrosion. Cut the 30 mm tubing into 40 mm lengths and fit over the end allowing about five millimetres overlap on the sleeve. To shrink the tubing it must be placed over a flame. The family gas barbeque is ideal for the job! If your wife will permit the operation it can be done over the normal gas stove. The main point is to constantly rotate the trap and not allow the flame to burn the tubing.

Begin applying heat to the larger diameter, rotating all the time, and then move along to the smaller diameter as the shrinking occurs. **Do not** overheat as the shrinking process will be too great and the sleeve will split and it will be necessary to begin again. There is a knack to this and it will soon be acquired.

After all traps have been treated in this manner the beam should be cleaned with steel wool and reassembled again. The dimension chart should be carefully followed and the beam set up to suit your particular requirement, CW or Phone operation. Check all clamps, connections, etc, to ensure nothing is loose. When all these procedures have been carried out the beam can be put back to work. The life of the shrink-tube is unknown at this stage but, if it only last five years, that will be enough. I can repeat the entire operation again, only next time I may change the colour!

THREE AMATEURS GO TO THE TOP

Well, to the top of the Northern Territory!

Keith Scott VK3SS
34 Henry Street, Maffra, Vic. 3860

For seven-and-a half weeks, from July to September, Sue VK3KDK, husband Michael VK3ZQV and Keith VK3SS, together with several others, drove from Gippsland in south-east Victoria, to the most distant points of the Northern Territory. Transport was three four-wheel drive vehicles.

In their vehicle, Sue and Mike took their two boys, one about eight-years, the other just crawling and 10-months old. The author was fortunate to be accompanied by Vic, an expert automotive engineer, who shared the driving and kept a close eye on the mechanics of the vehicle. The other vehicle was driven by John, a retired Senior Sergeant Policeman, his 83-year-old father and Harry, a machinery mechanic.

With a Royal Flying Doctor (RFDS) radio and plenty of amateur equipment, the group were well prepared.

The entourage travelled the complete Stuart Highway to Alice Springs, a town which continues to grow and is quite attractive — no longer resembling the outback!

A sad note enters here — Jock VK3DOJ, was waiting to join the party at Alice, but he was feeling far from well and, after receiving medical attention, decided to return home. Jock and the author had traversed many roads together and had many enjoyable times, but this was his last as he is now a Silent Key. (See Obituaries, December AR).

Next stop for the day was Mataranka. This is a lovely place with a famous warm fresh water spring running into a pool where it is possible to swim and splash all day. The scenic Waterhouse River meanders through here with canoeing a popular pastime.

The group were joined here by another couple, then all proceeded to Maranboy where permits to travel into Aboriginal lands were received from the Police Station. Destination from here was Nhulunbuy, at the far north-east tip of Gove Peninsula.

This took three days along a narrow, twisty track, crossing creeks and the metre deep Goyder River. The township of Nhulunbuy exists as a mining town to service and house workers at an open-cut-type bauxite mine from which aluminium is extracted in a lengthy and costly process. The deposit is huge and enormous earth-moving machines feed the worlds second largest plant 24-hours a day. Alumina, a light brown powdery substance is extracted, then shipped overseas for smelting and processing. A good deal of processing is also done in Australia.

Nhulunbuy has a local tourist committee to assist visitors, most of whom fly in from Darwin on packaged-tours. The track into town is such that it is often only open for five months each year, Summer and Autumn wet-seasons inundate the area with constant rain and large parts of the track disappear at these times.

Michael VK3ZQV, crossing the Goyder River in the Northern Territory.

Some of the committee guided us around the area on their free days, and pointed out places of interest on other days. We toured the mine, visited lovely beaches and swam in warm sea water.

Being surrounded on three sides by the sea, the area although hot, is quite comfortable due to sea breezes.

The scenery is tropical, with plenty of fresh water creeks and a river of two amid the tropical vegetation and was quite a change from the interior through which we had travelled previously. The locals were very friendly, as were the Aboriginals, and an enjoyable evening was spent with Darryl Heffernan VK8DH, an electronics technician at the mine.

After a fully-occupied five days stay it was time to turn around and traverse the same track which had brought us to Nhulunbuy.

Giant termite mounds, some over five metres high, are numerous along the track. Very little animal life was obvious — possibly the fauna has learned to keep away from the tracks, plus being hunted by the local inhabitants. Bird-life is plentiful around the lagoons right through Arnhem Land. Jabiru, Broglas, Magpie Geese, various Parrots and Cockatoos, Egrets, Herons, Pelicans, Hawks, Eagles, Ducks — you name it, they are there. In fact, it is estimated 25 percent of all our native birds reside in the area. Buffalo are plentiful, observing us along the track, although they are being slaughtered for pet meat and small goods.

We met, and chatted to, many friendly Aborigines along the track. Housing in their villages was satisfactory, tidy and reasonably well cared for. Our permits were endorsed with strict no alcohol restrictions, and warning signs near villages stated that breaches of these rules could lead to fines of $1000, plus confiscation of vehicles for anyone caught peddling alcohol. These rules are made by the Aboriginal councils and are legally supported.

The last couple to join the group went their own way at Katherine, and after a boat trip up the beautiful gorge at Katherine, we continued north to Darwin, visiting interesting areas en route.

A week or so was spent in Darwin, visiting friends and roving around the nearer parts of Kakadu National Park, a most interesting and scenic area.

Contact was kept at all times with amateurs via repeaters and two metres. Every day we reported in on the 14.104 MHz Travellers' Net, and spoke with the author's son, David VK3DY, and others in the Latrobe Valley. There was only one day when contact with VK6ART, the principal operator, on the Travellers' Net was impossible. Mobile antennas were used at all times!

Full marks go to Sue VK3KDK, who did an excellent job of cooking, washing and caring for two young boys and Michael, under trying conditions. Baby Nigel insisted on waking at first light each morning, wanting food, play and crawling over sleepy parents. She had little time for amateur radio, took everything, including some driving, in her stride, all with no complaints.

We proceeded up the Adelaide River on a large launch — very scenic but somewhat unsuitable for swimming due to large crocodiles laying on the oozing mud banks and swimming alongside the launch. We were warned to keep arms and legs well inside the boat!

From left: Michael VK3ZQV, Sue VK3KDK and Keith VK3SS.

The intrepid travellers in the "outback" examining a termite mound.

A light plane was hired for a 60-minute flight from Jabiru. This was most worthwhile to see and appreciate areas which it was impossible to see from the tracks. This particular area is mostly vast wet-lands, rivers, creeks, lagoons and swamps, which inundate vast areas during the wet season from about December to April.

Next was a tour over the Ranger uranium mine. It appeared that little damage was being caused to the environment with this mine and we were assured that the quarry and all-else had to be completely re-habitated when mining ceased. Safety precautions are thoroughly observed here.

Then on to the second permit journey through Aborigine land which took us to the most northerly tip of the Northern Territory, Smith Point, on the Cobourg Peninsula which juts out some 200 miles into the Arafura Sea. This was similar to the Gove Peninsula trip — beautiful seas, lagoons, bird-life, plus an all-day launch trip along Port Essington to a place which the British attempted to establish as a settlement in 1838, and called Victoria. It was to be the capital of all Northern Australia, but after much hard work in a most hostile environment, had to be abandoned in 1849. Interesting ruined remains of the settlement remain, showing the results of extreme hardship and labour in vain. This was an interesting insight into our early history.

The sea was like a mirror and photographs showed clouds clearly reflected on the surface. Dolphins and Manta-Rays swam near the launch.

The permits only allowed a seven-day visit, so after catching a few fish, plus plenty of large luscious oysters which abound on the rocks, it was time to turn for home, back into Kakadu, another launch trip on the Yellow Lagoons on Jim Jim Creek, and back to the highway at Pine Creek.

Leaving the main road near Katherine, we turned east along the Roper Highway, which follows the big Roper River. The highway soon deteriorated to a 4WD track following the Gulf into Queensland. Our choice of three tracks proved to be roughest yet encountered! It was necessary to cross many rivers and creeks (no bridges), but it was all very scenic and very hot. Stops were frequent to make quick plunges into the waters to cool off and erase the copious bull-dust — a fine dust on the outback roads which I estimate is the world's reserves of talcum powder!

Once into Queensland, we headed for Mount Isa, then due south near the Northern Territory border, into Birdsville, then across the Stony Desert to Innamincka. From there we passed through the extensive Moomba oil and gas fields, which supply gas to Adelaide and Sydney, visiting areas along Coopers Creek where Burke and Wills perished, then through Camerons Corner, the place where Queensland, New South Wales and South Australia meet! Onward over the undulating area into Milparinka, Tibooburra and along the Silver City Highway to Broken Hill. Michael and his elder son went down a mine to view the underground workings then we visited an old friend, Frank Bridgewater VK2ZI, who is a white cane operator. Frank is surrounded by many clever electronic aids which produce audible answers. With such assistance he can align his beams to the satellites and receive excellent results. We were pleasantly surprised to learn that most of these aids had been made by Roy VK3BTL, one of our Eastern Zone members from Gippsland.

The remainder of the safari was routine — back via Mildura and home after 52 days which covered 13 198 interesting kilometres and used 982 litres of petrol.

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SECONDHAND EQUIPMENT GUIDE

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

THERE APPEARS TO have been an decrease in the amount and range of secondhand amateur and communications radio equipment advertised.

Theory put forward for this include the high cost of new equipment (imports under pressure of foreign exchange currency rates) resulting in people keeping their equipment longer.

Whatever the reason, there is always someone wanting to buy secondhand equipment and a shortage of this equipment can affect the hobby. In some shacks, and elsewhere, there is surplus equipment which could be recycled to help someone get-on-air, or to assist an upgraded licensee to develop their station.

Those just starting out face the prospect of either finding the money to buy a new transceiver, antenna rotator, SWR bridge or whatever. Their alternative is to locate a suitable secondhand item.

Some surplus equipment is not in working order, or has a fault, and the present owner could be reluctant to sell it in such a condition.

Perhaps a challenge for the WIA, clubs and groups is to refurbish "faulty" equipment so it may be recycled?

If it is real "junk", parts may still be useful as replacements to repair other pieces or could come in handy for a home-brew project.

Selling unwanted or surplus equipment can also mean cash to spend on a new piece of equipment — or the funds can go towards one of the many kits now available.

Accompanying this article is a survey of advertised or otherwise available equipment, wares at radio club "white elephants", and industry source secondhand valuations. It must be stressed that this is only a guide to the prices currently being asked. Prices will vary according to the condition and age of equipment — for example, some linear amplifiers and early model HF transceivers have a wide price variation.

BUYER BEWARE AND PREPARED

Knowing something about the equipment and what the model numbers mean is essential. Like any electronic consumer purchase, the advice is to learn as much about the types of equipment available as you can. Things such as when it was made, its operation, features, differing models, popularity, or any known problems.

Recommended reading is the on-going series of articles *Know Your Secondhand Equipment* by Ron Fisher VK3OM, and check the annual indexes of AR magazine for a list of *Equipment Reviews*.

Unless you are experienced in fixing electronic equipment, avoid an item which seems cheap and the seller claims "needs only a little attention". If the equipment needs a major refurbish the cost of parts, particularly if import replacements are involved, can be very expensive.

TEST DRIVE BEFORE YOU BUY

When buying a major item such as a transceiver, check its history and, if possible, give it a try. Depending on circumstances you may be able to put the item on air for a test.

If you can get the help of a friend who has a similar piece of equipment a comparison can be made for performance on the various bands. Obviously, if you compare a late model transceiver (for instance) with something much older there may be some difference in favour of the modern unit on receiver performance.

Testing a transmitter to determine if its rated power output is okay can be done simply by tuning it up via a watt meter into a dummy load. Take the time to run it on all of the bands to ensure it works on each. Should you consider such a test is necessary, and the seller is co-operative, let the owner tune-up the transmitter as you are unfamiliar with the equipment.

Audio quality can be checked on a separate receiver or on-air reports could be a sufficient test.

With other items, such as receivers or VHF/UHF scanners, the test should include using all of its functions. With programmable receivers push the buttons to program in a channel, and check out the scan rate, search, delay, lock-out, priority or whatever the test has according to the owner's manual.

LIFT THE LID

Outside appearance can be deceiving and, while a major item costing hundreds of dollars may look alright, only lifting the lid will determine if it has signs of aging or abuse. Has it been given a "tweak" with a screwdriver in every slot, such as tuning slugs and trimmer capacitors?

Some modifications will improve performance but the trap is to have such modifications documented because, should something go wrong, the modification can make repairs following a standard circuit diagram difficult.

Smoking is a health hazard, not only to humans, but also electronic equipment. Amateur radio transceivers and linear amplifiers — particularly those with a cooler fan — can certainly suffer from inhaling tobacco smoke. The sticky amber coloured substance gets baked on components and combines with dust and dirt to damage moving parts, including relays, switches and dial mechanisms.

HAMADS THE MEDIUM

One of the oldest and most known services to WIA members is the regular monthly Hamads.

This listing of For Sale, Wanted, Give-a-way, and Exchange advertisements has been keenly read by generations of radio amateurs and shortwave listeners.

You can use your free entitlement to advertise surplus equipment and components, books, magazines and collectibles.

Is there something or help you need? Want to swap? Sell? Donate? Offer? Borrow? Try Hamads — read by the majority of active radio amateurs and SWLs.

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FINE TUNING FOR THE EARLY FRG-7

Alistair Elrick VK4FTL
C/- Base Radio Station, RAAF, Amberley, Qld. 4305

Early models of the FRG-7 lacked the fine-tune control fitted to later versions which made the resolving of SSB signals an easier task than with the high-geared main VFO dial.

This upgrade proved to be a successful alternative to the use of a variable capacitor as in the later versions and improves the operation of the budget priced older models of this popular receiver.

Perusal of the circuit diagrams of several transceivers revealed the use of a varicap diode as the tuning element controlled by a bias voltage applied by a linear taper pot.

Working with these circuits as a guide, the circuit in Figure 1 was derived from readily available parts and built on older style Veroboard which enabled the tracks of the board (mounted vertically) to be soldered directly to TP-401 and TP-402, with additional support from a small bracket between the board and the chassis.

Supply voltage can be taken from TP-406 (+9V) on the IF/AF board and fed to the 50k pot (VR-1) on the front panel via a 1k resistor (R1) with another 1k resistor (R2) completing the circuit to earth from the other side of the pot. The voltage available at the wiper should vary between +3 volts and +6 volts. This variation was sufficient to shift the VFO frequency by approximately 1.2 kHz measured at TP-401, enabling adequate fine tuning of SSB signals.

If greater frequency shift is required reduction of R1 and R2 will provide more voltage change and hence more frequency shift.

Following installation it will be necessary to re-calibrate the main VFO dial in accordance with the fine tune pot in the mid-position (half voltage at wiper). Select LSB, set MHz dial to zero and hair-line centre. Rotate main VFO past 1000 to be within five millimetres of the ▲ mark, for correct position of main VFO scale. Set dial to 1000, and a beat note will be heard. Adjust T-403 for zero-beat. Set the dial to zero and adjust TC-403 for zero-beat. Repeat these steps until tracking is completed.

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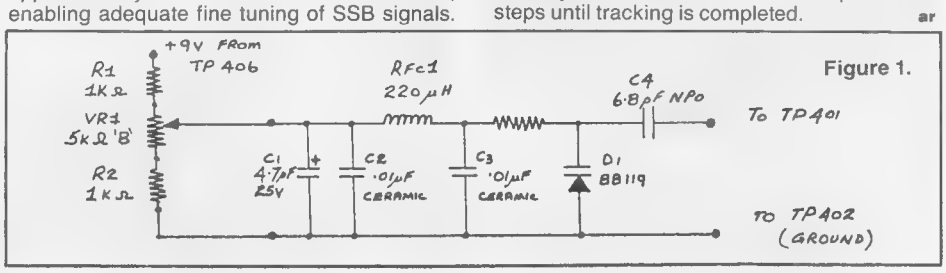

Figure 1.

HF TRANSCEIVERS & TRANSMITTERS

Collins KWM-2	$270
Collins 32S	$200
Drake TR4C	$300
FL200B (Tx)	$120
FLDX400 (Tx)	$235
FTDX100	$170
FTDX400	$310
FTDX401	$300
FT7	$240
FT7B	$300
FT75B	$300
FT ONE	$200
FT101B	$250
FT101E	$350 — $420
FT101ZD	$600 +
FT107DM	$550
FT102	$1130
FT200	$200
FT310	$240
FT301D	$300
FT301S	$270
FT501	$500
FT77S	$530
FT77	$620
FT707	$600
FT757GX	$1100
FT902D	$595
FT902DM	$300
FT980	$1400
TS120S	$450
TS120V	$350
TS130S	$600
TS180S	$600
TS430S	$900
TS440S	$1250
TS500	$175
TS510	$275
TS520	$375
TS520S	$400
TS530S	$570
TS820S	$500
TS830S	$850
TS930S	$1400 — $1650
IC701	$600
IC720A	$600
IC730	$600
IC735	$1300
IC740	$800
IC745	$930
IC751	$1400
Atlax 210X	$250
Swan 240	$150
Swan 350C	$195
Swan Astro 150	$150
Ten-Tec Argonaut 515	$250
Ten-Tec 580 Delta	$
Uniden 2020	$150
Viceroy (200W)	$75
Galaxy 5	$50
NEC CQ110E	$300

TRANSVERTERS

FTV250B (2m)	$100
FTV650B (6m)	$95
FTV901 (2m & 6m)	$300
DSE 10/11m to 80m	$45

TWO METRE TRANSCEIVERS

Kenwood TH21 HT	$250
Kenwood TR7400	$250
Kenwood TR7600	$230
Kenwood TR7800	$300
Kenwood TR2400 HT	$300
Kenwood TR7850	$550
Kenwood TS700SP	$500
Kenwood TS7850	$550
Kenwood 2500	$300
Kenwood TWA000A 2m/70cm	$590
Kyokuto 144-105XR	$145
FT2FB	$150
FT227RA	$200
FT208R HT	$210
FT209R HT	$350
FT209RH HT	$500
FT290R	$425
FT270RH	$600
FT230R	$300
FT480R	$425
FT2700R 2m/70cm	$820
IC202 (SSB)	$100
IC3200A 2m/70cm	$500
IC21A	$135
IC25A	$300
IC25E	$400
IC27A	$480
IC211	$400
IC22A	$90
IC22S	$150
IC2A HT	$175
IC02A HT	$270
IC202	$100
IC25E	$400
IC255	$250 — $400
IC260A	$200
IC271A	$760
IC271H	$1200
IC280	$150 — $250
IC290A	$500
Ken KP202 HT	$50
Multi Palm 2 HT	$100
Multi 750A	$290
DSE Commander	$100

SEVENTY CENTIMETRE TRANSCEIVERS

IC370	$400
IC45A	$250 — $300
IC4E HT	$230
IC04A HT	$400
IC37D	$430
IC471A	$750
IC471H	$1070
IC490A	$600
Kenwood TR8400	$350
Kenwood TR9500	$500
FT709R	$405
FT780R	$550
Philips FM320/321	$250
DSE Explorer	$130

SIX METRE TRANSCEIVERS

IC502A	$110
IC505	$500
IC551	$480
FT680R	$400
FT690R	$340

LINEAR AMPLIFIERS

Collins 30L-1	$800
Dentron Clipperton-L	$550
Heath SB230	$650
FL110	$150
FL2100B	$400
FL2100Z	$495 — $1200
FL2050 2m	$200
Kenwood TL120	$100
Kenwood TL922	$850
Swan 1500Z	$550

EXTERNAL VFO

FV101B	$60
FV101B	$60
FV101DM	$165
FV901DM	$80

MICROPHONES & SPEAKERS

Diawa c/less infrared	$85
D104	$35
DX344	$60
Icom IC-SM5	$40
Icom IC-SM6 desk	$40
Kenwood MC35C noise cancel	$34
Kenwood desk MC50	$35
Kenwood spkr SP180	$35
Kenwood spkr SP520	$30
Leson Power desk	$40
Shure 401A hand mic	$38
Shure 444 desk	$65
SMC25 spkr/mic	$25
Turner base	$30
Yaesu MD1 desk	$100
Yaesu YD148 desk	$35
Yaesu UD844A desk	$55
Yaesu YD846 hand mic	$20
Yaesu YH2 headset	$45
Yaesu SP901 spkr	$50

RECEIVERS

Barlow Wadley XCR30	$66
Bearcat DX1000	$480
Collins 75A4	$125
Collins 75S	$200
Drake 2B	$120
Drake SSR-1	$130
Eddystone 830	$300
Eddystone EC10	$90
Geloso G4/216 Amateur Band	$100
Hallicrafters 27-145 MHz	$120
Hallicrafters SX100	$190
Icom R70	$540
Icom ICR71A	$650
Kenwood R1000	$350
Kenwood R2000	$550
Kenwood R5990	$275
Lafayette HA800 Amateur Band	$170
Lafayette P100 VHF Tunable	$50
National DR28	$210
National DR Q63	$360
Realistic DX150	$70
Realistic DX190	$100
Realistic DX200	$100
Realistic DX300	$230
Realistic DX302	$200
Realistic DX360	$115
Realistic DX400	$250
Skycom VHF Aircraft	$50
Sony ICF201	$220
Sony ICF2001D	$490
Sony ICF7600D	$235
Tandy Patrolman	$80
Trio 9R59DS	$35
Yaesu FRG9600 VHF/UHF	$650
Yaesu FRG7	$120
Yaesu FRG7700	$300 — $500

RECEIVER CONVERTERS

FRV7700 VHF	$75
FRV7700(B)	$150

POWER SUPPLIES

FP700 (20 amp)	$195
ICPS20 (20 amp)	$250
Kenwood PS30 (30 amp)	$350
VK Powermaster (20 amp)	$140

MONITORSCOPES

Heathkit SB610	$90
Kenwood SM220	$250
Yaesu YO-100	$100
Yaesu YO-901	$200

SCANNER RECEIVERS

AR2001	$400
AR2002	$590
Bearcat 20/20	$300
Bearcat 150FB	$275
Bearcat 200FB	$250
Bearcat 210	$110
Bearcat 250	$190
Bearcat DX1000	$480
Firelert	$120
Handic 20	$190
JIL SX100	$100
JIL SX200	$325
Micromm SX150	$250
Micromm SX155	$310
Realistic PRO2002	$330
Realistic PRO2003	$375
Realistic PRO2009	$180
Realistic PRO20-20	$280
Realistic PRO-30	$250
Regency HX2000	$250
Saiko SX150	$300
Saiko SC7000	$280 — $420
Realistic PRO30	$265
Yaesu FRG9600	$650
Uniden 100XL	$300

HF BEAMS

ATN 8el Log Periodic	$400
Chirnside CE35LX Triband	$300
Chirnside CE42 10/15m	$90
Hidaka 3el Triband	$200
Hy-Gain TH3jr	$250
Hy-Gain TK3Mk3	$250 — $300
Hy-Gain TH6DXX	$500
Hy-Gain 204BA	$195
Hy-Gain 10/15	$100
Mosley TA33	$130
TET HB33M	$200
TET HB-35C 5el Triband	$300
TET HB443 4el Quadband	$480
Wilson 4el 10/15	$75
Wulf 3el 14 MHz	$160
Wulf 3el 10/15m	$100

ROTATORS

Archer	$80
CDE Ham 2	$150
Commander 400	$160
Diawa DR750DX	$250
Diawa 7600X HD	$300
Emotator 502CXX	$110
Emotator 502SAX	$100
Ken KR400 MD	$115
Kenpro Elevation	$250

TELEPRINTERS

Creed 7	$15
Model 15	$30
Siemens M100	$65 — $90
Siemens M100 Rx only	$35

VHF & UHF ANTENNAS

AOR DA300 Discone	$110
ATN 2m 13el	$75
Hoxin 9dB 2m Vertical	$75
Ringo 2m	$45
Wulf 2m 11el	$60
Wulf 6m 6el	$90
Scan-X Discone	$40

ANTENNA TUNERS

Diawa CNW217	$140
Diawa CNW418	$150
Emtron EAT300	$165
IC-AT130	$130
IC-AT500	$1150
Kenwood AT200	$150
Kenwood AT230	$150
Kenwood AT250	$300
Yaesu FC700	$150
Yaesu FC757AT	$375
Yaesu FC707	$170
Yaesu FRT7700	$60

MISCELLANEOUS

DSE VHF/UHF DF Unit	$105
Clipsal Key	$35
Hi-Mound Key	$10
Katsumi EK-150 Keyer	$75
Bencher Paddle	$120
Bandit Spider Quad Hub	$25
Hustler Whips 6 bands & mount	$20
Yaesu RMS-2 Gutter Mount	$20
Yaesu RML series Whips	$25
Butternut HF5V Vertical	$190
Hy-Gain 18AVT Vertical	$80
Nagarara 5 band Vertical	$80
V5JR 5 band Vertical	$60
Yaesu FRA7700 Active Antenna	$60
RAIC BL70A Balun	$25
RAK Balun	$20
W2AU Balun	$20
Coaxial 3-pos Switch	$24
ETI 755 RTTY Modem	$60
VZ200/300 RTTY Decoder	$55
MFJ1224 RTTY Modem	$200
Tono Theta 5000E	$850
Tono 7000	$600
Tono 7000DE	$700
Nichols W/Pecker Blanker	$32
Yaesu QTR-24 World Clock	$30
Yaesu YC7B Digital R/O	$30
Yaesu Fan	$5
Oskerblock SWR200	$60
Robot 400 SSTV Converter	$200
Emtron EP200 SWR/PWR Meter	$75
Welz SP350 SWR/PWR Meter	$75
Welz SP-15M SWR/PWR Meter	$50
Welz DL600 Dummy Load	$95
YP150 Dummy Load Watt Meter	$100
Drake 200Y2K Watt Meter	$50
Helray Peak Power Meter	$40
CRO Leader Ham 310	$150
CRO Serviscope 513	$100
Roller Inductor	$25
Tech TE20D Signal Generator	$40
Trio DMB1 GDO	$120
MFJ202 RF Noise Bridge	$65

CLANDESTINE SWLing — from the other side of the fence

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Inoperative radios were legion.

Even now, after a considerable time lapse, I receive the occasional on-air comment suggesting the possibility of another *Clandestine* article. This, of course, refers to the three articles in AR publications of March 1984, and February/December 1985, relative to the construction of a shortwave receiver, a magnetic compass, and a water boiler in the Prisoner of War camp in south-east Germany. I stated in December 1985, that it would be my final article — perhaps "force majeure" could be the excuse for this return to the theme?

Referral to the above publications is recommended to refresh the background details relative to this camp, a sugar factory, 15 kilometres south of Wroclaw (then the German city of Breslau).

By mid-1943, a specific routine had been established — the working week seven days, 84 hours — the duties heavy, cold and wet. Each POW, with one or more German civilian workers, was allocated to a definite job. Yours truly to the electrical workshop, plus acting as camp interpreter. By this time, goods and services available to the public were minimal, but the basic necessities of life were rationed and distributed with typical German efficiency, which applied until the closing days of the war.

The intense war effort had recruited all German males in the 18 to 50 years bracket, and this void was filled by foreign forced labour and prisoners of war. Skilled tradesman services to civilians were non-existent; repairs to vehicles, houses, domestic appliances, came to a halt. Inoperative radios were legion. I had surreptitiously hinted in the right quarters of my radio knowledge, and this information, propagated by factory workers, had infiltrated the locality.

This area of Germany was primarily agricultural, with sugar beet the predominant crop. Most of the affluent landowners were sugar factory shareholders, and exerted a certain influence over factory management. Thus, their calls for tradesman service were complied with by the factory, despite this being forbidden by the bureaucracy.

These landowners lived in an opulent Manor House-type of society, the absolute antithesis of the German farm labourers' lifestyle. Food, clothing and drink rationing had bypassed them, and two or more house servants were a permanent feature of their households.

The norm for their residence was 15 rooms, three storey — a pretentiously portalled front entrance, stepped to the first floor, and one rear entrance, strictly servants and tradesmen. The 'Lord' of the mansion was invariably ensconced in Berlin, with a post that carried Officer ranking. His spouse remained 'el supremo' at home, to qualify as an occupied residence, and retain its extravagant fringe benefits.

One fine autumn day, as yet another recurring malaria attack was descending upon me, an SOS re an electrical fault was received by the factory, from one of these properties, four kilometres distant (not the place from which I obtained headphones for my shortwave receiver, AR, March 1984).

If the job happened to be of a minor electrical nature, yours truly was usually allotted the task, accompanied by an armed guard, even though they were not responsible for duty beyond the factory precinct. But the fine food and female staff at these kitchens of the wealthy, ensured that off-duty guards volunteered with alacrity.

By the time the manor house was reached, my temperature had reached a debilitating level, but the axiom was — "If you can walk, you can work."

With the guard settled in a chair near the door, a kitchen maid explained that, although their handyman had checked wall fuses, three hot plates on the large range were not operating. I soon ascertained there were separate in-built fuses for the three phases — one was blown, and soon replaced. She then stated that her "Madam" upstairs wished to see me, and escorted me to her. The maid was dismissed, and after a few awkward minutes of rather irrelevant conversation, she asked in perfect English "Are you the prisoner that understands radio?"

She then explained, in short, that her receiver had an intermittent fault. But I said that I was in no condition to delve into the intricate innards of her radio, and that malaria was positively non-contagious. She introduced herself as Frau von Konig, of Linden Manor — middle-aged, and obviously well educated. With the ice thus broken, she expressed her concern re my health, and suggested she would call me again, that radio would not be mentioned, but that I bring appropriate tools.

Visit number two, with the guard and two maids heavily involved on the ground floor, (literally), Frau K showed me the skittish radio. A fine six-valve Blaupunkt, with Long, Medium and Short Wave capability. Low and medium wave were common on most European sets of that period, but shortwave was only on the more expensive units. The latter was severely frowned upon by Goebbels, Himmler and Associates.

With no possibility of eavesdropping on this first floor, Frau K intimated that the fault was primarily on the shortwave band, which she wanted corrected if possible. I then immediately knew where I stood — she wished to receive allied (or enemy, depending on which side of the fence ones/sympathies lay) news services. She requested the set be moved into a small inconspicuous study, adjacent to the spacious lounge room in which it stood. She was acutely aware of the risk to her, if it were decreed there was an ulterior motive in repairing such a sensitive shortwave receiver.

This situation was, of course, a totally unexpected turn of events — one read of such happenings in paper back novels. As this was the period when I was experiencing difficulty in producing a shortwave tuning coil for the receiver hidden in our barracks, and the blonde lass had not yet located a set of headphones for me, I decided to foster this opportunity at all costs. At least it could mean a tenuous iron in the fire towards hearing some news from our side of the fence. The persistent propaganda machine, combined with the onerous work load, was adversely affecting our work party's morale. Also, I must admit to a smug satisfaction in assisting a German national to 'do the wrong thing.'

I removed the chassis and speaker from the cabinet. The speaker was a heavy dynamic type, with the large diaphragm field coil also serving as a power supply filter choke, which was in series with the rectifier valve output, of about 400 volts. Electrolytic filter capacitors of about 10 mfd, 500 volts working, 800 volts peak, were connected at each end of this coil. If the set was switched on with the speaker disconnected, voltage across the first capacitor could rise to peak. As it was, voltage rose to over 500 for a short period, while valve cathodes were warming. The forgoing was common circuitry of the time.

A brief under chassis exploration revealed the fault — some sealant wax from a paper capacitor had infiltrated the wave change switch. A tedious 15 minutes probing with madam's slim nail file corrected this. Touching the antenna terminal with a screwdriver indicated the set was now sensitive on all bands and it was quickly re-assembled.

At this point, Frau K advised the kitchen by house phone that the power point job was not yet completes, that the 'Englander' (the common designation for all Western POWs), would be coming down to eat with the guard. The girls were goggle-eyed at sharing their table with an armed soldier and an enemy alien, but, nonetheless, they proceeded to ply the alien with the best meal he had faced in three years!

Radio reception of enemy transmissions was strictly forbidden, and effective antennas, especially external, were non-existent. This set had the usual short piece of wire hanging from the rear, which was adequate for the local State controlled stations. It responded fairly well to two MW and one LW German station, but of shortwave there was nothing readable, at which Frau K showed disappointment. Obviously a much higher RF pick-up was essential, without an antenna being noticeable. She ruled out a long internal one, no matter how well concealed, owing to visits by military brass and her husband.

While pondering the matter, I noticed a heavy vertical copper wire, secured by stand off insulators to the outside wall, just to one side of the window. Frau K said that it was a lightning conductor, from a small copper-roofed attic window. This was the answer! — a ready-made, disguised, vertical antenna. I explained that, if possible, I wished to disconnect it top and bottom — she was quite happy for me to render it inoperative as a lightning conductor.

I went up to the second floor (bedrooms only), leaned out of the corresponding window, and was just able to reach an insulator. Pulling upward on the wire slack enabled me to cut the wire at the point equivalent to the centre of the cylindrical insulator. Both ends were then turned back and forced back into the insulator, leaving a gap — the wire held satisfactorily. This was to obviate noise emanating from possible poor joints in the sheet copper roof. I wished to achieve the same at the bottom end, and disconnect the wire from actual earth. Madam and I conferred on this in English. By now she was addressing me as Rex, the preferred name, as the Germans had trouble in pronouncing the soft 'g', as in Reg. We decided to go down to the kitchen, where, after mentioning that I was continuing a safety check on earth circuits, she would engage the girls in a domestic discussion.

The guard, having dined and wined beyond his austere norm, was obviously seeing the world with a rosy aura. I explained that the earth stake, partially concealed by shrubbery, six metres from the door, needed checking. He remained at the door, clearly fantasising on other matters, as I repeated the earth wire modifications.

Back on the first floor, we found the existing short antenna on the set would just reach the outside wire by moving it closer to the window. I had previously noticed a paper clamp in the study,

and this made an effective, quick connection. Hey Presto! In two hours an efficient, centre fed, vertical antenna had been produced, visually still a paragon of innocence. An added bonus — that wall was oriented westward, towards England.

The 20 second warm-up period seemed eternity — then the shortwave band came alive. Tuning around 25 metres, a good signal was received, and within minutes I identified this as England!

Elation was disturbed by the strident phone — the guard announcing "knock-off" time. It was just after 5 pm — an hours' walk back to the factory and my shift was 6 am to 6 pm. I quickly shepherded madam through a dummy run, emphasising the importance of returning the paper clamp to her study — she proved safe and efficient. I reminded her that local time was one hour ahead of Greenwich, and that from memory, BBC News was on the hour, several times a day. As I departed, in a 'partners-in-crime" tone, she said that in a few weeks she would engineer a hoax, to call the factory again for my services, to give a report on the success or otherwise of our exercise.

In due course, accompanied by the same enthusiastic guard, Josef, I returned to Linden Manor, to meet a completely changed lady. In the security of her private first floor residence, she literally bubbled of her success with BBC shortwave broadcasts, and also confessed she had distant relatives in England. Meantime, to preserve the hoax in case of intrusion, I was kneeling on the carpet near a dismantled power point, tool kit at the ready.

For security reasons, she restricted her listening to one news service every other day, and was now aghast at the subtle manner in which the Goebbels Propaganda Ministry was hoodwinking the majority of the German nation. She had felt for over a year that the persistently optimistic German news could not be correct. Now, with news from the other side of the fence as a modifying comparison, she realised the situation was hopeless, and for the sake of humanity, wished for war's end.

By this time I was receiving BBC news in our barracks, and knew as much as she did, but could not even hint of this. She was openly grateful for my assistance — I felt recompensed in the knowledge that I had made a minuscule exposure of propaganda inaccuracies to a German national. Also, the short breaks away from the endless work routine and frugal meals, in the humid, noisy factory, were a sorely needed boost to morale. I did not meet this fine lady again.

When I was leaving, Frau K furtively mentioned that possibility of a job at a neighbouring property, where a similar situation existed.

Eventually, as predicted, accompanied by Josef, yours truly found himself in the other Manor House, similar in design, but a higher level of affluence. It even boasted a small first-floor swimming pool, for which coal was available! How the upper social strata lived, world-wide!

The lady in charge was elderly, tall, dominant, with a stiff Prussian demeanour, and spoke only stilted German to me, although I knew she was fluent in English. She was playing a role, hoping that from Frau K I knew the real reason for the visit. I played also, and asked her why I had been summoned, to which she lamely replied, "Could you check the power points?"

The hoax proceeded with — I left one uncovered and asked was there anything further. She glanced toward a compact radio on a book case. Upon examination, it proved to be five valve, older that the Linden Manor set, barely one metre of antenna, but included a shortwave band. I felt, despite its lower sensitivity, it should have possibilities.

Madam maintained her haughty mien, so I embarked on a solo exploration of concealed antenna possibilities. No lightning conductor bonus here, and other alternatives in the lounge room appeared lean.

I then passed through to the swimming pool area, and initially it appeared to offer nothing. Rather austere, with two bland and two window walls, and an L-shaped security rail near the pool. Just as I was leaving, it dawned on me that the rail was plated metal, eight metres long, supported on carved wooden posts. It was such a blatantly obvious antenna, that it had escaped my notice (and also that of others). One of the window walls had an aspect favouring England, and I presumed glass presented much lower RF attenuation than double masonry.

During warmer months, because of excellent natural light, Madam was wont to read in there, so it would be nothing markedly new if she occasionally had the radio with her.

I carried the set to the pool, stripped the short antenna wire end, wrapped it once around the rail, switched on, and tuned it to shortwave. Finally, England was identified, only about R3 S2, but adequate for the purpose.

The lady agreed that a practice run was desirable. The set was transferred to a disused, castered coffee table, which she trundled into the swimming area, attached antenna to rail, sat back in her customary reading chair, and switched on. From her dexterity in tuning shortwave, it was apparent she had often tried, albeit without success, because of an inadequate antenna. She picked up a signal in garbled German, very likely a Russian station, jammed by Germany. Soon an English transmitter was heard, and she switched off, commenting that her only interest was to check on the "quatsch" (twaddle), that was being fed to the English! By now I was adamant to do all that I could, to expose this person to the truth.

While still seated, she swung the table in an arc away from the rail, the antenna single turn freed easily, and she switched to mediumwave. This disengagement manoeuvre took about five seconds.

Much to Josef's chagrin, the 'power point' job finished at 3 pm — we had been well fed, but it was the first and last visit to that property.

The following is an example of life and conditions under totally different circumstances, but despite the risk, the desire to listen over the fence was paramount.

A call came from a dairy farm — the symptoms, no lights in the barn. An hours' walk later, in the gloomy dairy, surrounded by cobblestones and munching cows, I was unable to locate the short in the antiquated wiring. A temporary direct cable, bypassing switches, was suggested. Josef objected to the additional hike to the factory for new cable, so a Ukrainian, with a note, was despatched on a bicycle.

With possibly one-and-a-half-hours to kill (the Ukrainian was not noted as a speedster), I took stock of the surroundings. About 30 Friesian cows, housed most of the time in the barn, with hay loft above, maintained the temperature year round at about 27 degrees Celsius. Two German males, a working manager and a foreman, exempt from war because of their livestock expertise, ran the place, assisted by Polish and Ukrainians.

The foreman and his wife were sweeping cobblestones, when he approached the guard and asked could the Englander come to his quarters (immediately above the diary), to repair his electric hot plate.

With time to spare, Josef agreed to this (he was occupied watching a hay-carrying Polish lass). So, up the stairs with the foreman, followed a little later by his wife. Named Rosel and Hans, they wore wooden clogs and were austerely dressed. The abode was stark, unheated, and without running water. Their working week was seven days, 70 hours, the pay reasonable, but very little could be purchased beyond the ration card allotments. Because their work was not categorised as "heavy" they did not receive a full food ration. They were good, honest, simple people — the type on which any nation is built.

The hot plate problem was soon diagnosed and repaired — aged, a spiral heater wire had broken. Hans then departed to his job. Rosel, somewhat awkwardly, then confided that her next request should not involve her husband. His punishment could be action on the Russian front — hers, at most, hard labour imprisonment.

In fearful undertones, she asked could their radio be capable of receiving England — they had tried, without success. There was no glimmer of light in their lives, the risk was worth it. The non-resident owner had given them the set, second-hand, in 1938, when they accepted the job. I lifted it from the dresser shelf, their only furniture, and ascertained it was a Dutch Philips — LW, MW and shortwave; the screwdriver test showed sensitivity on the shortwave band. Once again, the antenna was under a metre long. How to safely conceal an antenna in this stark room? I was not prepared to put this couple at risk.

Some time passed before I made a decision. Immediately above the radio shelf, but still part of the dresser, was an enclosed cupboard, with a perforated zinc sheet ventilator, 100 x 100 millimetres, top and bottom. The shelves has recently been covered with wallpaper, glued with flour paste. Was there any wire? Rosel quickly presented a discarded, perished ironing cord.

My line of thought was interrupted by Hans calling up the stairs — the Ukraine Parcels Express had returned with the cable.

I hurriedly detailed to Rosel what must be done. Strip the iron cord, remove insulation and separate the conductors into wires of only four strands each. These were to be cleaned thoroughly, especially the 50 millimetres of each end, which were to be twisted together to produce a continuous wire about eight metres long. This wire to be placed on the bottom shelf of the cupboard, zig-zag fashion, with one end firmly attached to the ventilator.

Scraps of matching paper were then to be glued over the wire, taking care to cover the wire connection at the edge of the ventilator. For shortwave reception, simply hook the short antenna wire into the vent grill immediately above. I bade her goodbye and assured her the subterfuge would work.

Some weeks later, Hans came to the factory for a load of stock-feed, and called to me as he waited in the queue. Hoping to meet me, he had appointed himself to this pick-up. Rosel sent her greetings, the radio was great. Unbiased news reports had resurrected new life within them; they no longer felt led down a blinkered path by local media. Two ordinary people, two Germans, on the bottom end of the socio-economic scale, now somewhat enlightened. It was Hans' turn to load — he hastily passed me a tiny package and bid me farewell; it contained a small piece of smoked sausage, their week's ration.

The foregoing is one more revelation of the way that radio, almost unnoticed, causes widely diversified paths to cross. These paths can be made by people of totally unrelated social, national, political or religious persuasions. The common bond of radio is capable of unification.

ADDENDUM — harmonics from the past

Two years after the war, I received a brief communique, through Australia Army Headquarters and the Victorian Police, from a Mrs Konig (no address), then resident in England. It simply inquired, had I survived. I replied briefly, through the same channel. There has been no further contact.

In March 1987, with the help of Polish friends, I wrote to the Postmaster of Wroclaw (Breslau), seeking information on the sugar factory. His reply stated the place had been renovated, and was now producing jam and other fruit products — the factory is now 70 years old.

In the same month I obtained a New Zealand address, and inquired about old Kiwi friends. The one that had been primarily responsible for getting the radio back to me (March 1984, AR), had died two months prior to my letter.

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Examination Devolution Update

Jim Linton VK3PC
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The Department of Transport and Communication (DOTC) has announced it will go ahead with its proposal to devolve examinations for amateur operator certificates of proficiency to outside bodies and individuals.

DOTC has been heading towards such a move over the last few years in an atmosphere of government deregulation and a user-pays policy.

The Department's prime justification for handing over the conduct of examinations to outside bodies is an escalating cost of exams. DOTC estimates the annual cost to administer the examinations is $285 000 while revenue from the activity is $35 000 — a deficit of $250 000.

Under the user pays principle, DOTC says it would have to charge the 1600 candidates sitting 3000 examinations a year much higher fees on a full cost recovery basis.

The present fees and what they would cost under user-pays (in brackets) according to DOTC are:

Regulations $5 ($32)
Theory $10 ($64)
Morse Code — sending $5 ($32)
Morse Code — receiving $10 ($64)

But the DOTC says benefits will be gained from devolution by both the Department and the amateur radio community (see earlier article, February 1987, page 22).

In November 1986, DOTC circulated a package of information called a draft accreditation package to the State Technical and Further Education (TAFE) directors, amateur radio clubs, individuals and the Wireless Institute of Australia. It invited comments on the package and received a total of 71 submissions.

DOTC says the vast majority (84 percent) were in favour of the proposal, but nearly all of the submissions expressed concern with one or another aspect of it.

The Department, in a recently issued report titled "Devolution of Amateur Examinations" seeks to highlight and answer the concerns. The main points are listed here:

- The responsibility of examinations will be devolved.
- DOTC to supply papers on request to examiners up to March 1, 1989.
- The Department to verify and ensure examination standards.
- Examination papers to be DOTC approved.
- DOTC makes available its Morse code examination generating program.
- Examiners must retain all candidates papers for at least a year.
- Market forces will set examination fees.
- Complaints of impropriety or examination misconduct will be investigated.
- Verification of candidates identification is required.
- Both DOTC and examiners to conduct examinations for handicapped candidates.
- Remote candidates to be examined by a local person acting as an examination supervisor.
- Examiners required to give DOTC an advance schedule of their examinations.
- Candidates cannot be required to have undergone a prerequisite course.
- Examiners need not hold amateur operator certificates of proficiency.

A key issue of concern about devolvement contained in the submissions DOTC received was the "Standard and Integrity" of examinations. DOTC, in the report, say legislation requires examinations to be approved by the Department. The legislation requires the Department to verify and ensure examination standards.

The report says in addition to approving examinations papers, the Department will visit the examination centres and conduct other checks to verify that the standards are being maintained.

DOTC Manager of the Regulatory Operations Branch, Radio Frequency Division, David Hunt says a series of public forums will be held this month in all State Capitals to explain the devolution process to interested radio amateurs. The forums are particularly designed to explain the requirements and administrative procedures necessary to become an examiner.

Mr Hunt says anyone interested in becoming an examiner should plan to attend these forums to obtain first hand information and to resolve any problems or concerns they may have with the action. He says the Department aims to have examiners accredited from March 1, 1988, and a 12 month phasing-in period before full devolvement is in place.

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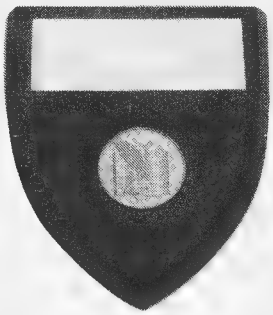
PUBLICATIONS COMMITTEE AWARDS

In December each year the Publications Committee selects those contributors to *Amateur Radio* during the year whose contributions or services are judged of sufficient merit to win one of the three Magazine Awards.

For 1987, the awards went to the following contributors, with the Committee's congratulations.

Bill Rice VK3ABP

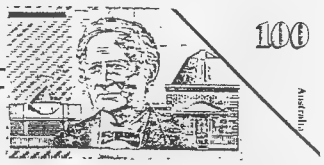


AL SHAWSMITH JOURNALISTIC AWARD (For the article on a radio theme considered best to display literary merit — $100 plus engraved plaque)

To Bert Trupp VK5BVN, for his article "Antarctic Communications".

TECHNICAL AWARD (For the best Technical Article/s of the year — $100)

This was awarded jointly to Harold Hepburn VK3AFQ and John Day VK3ZJF, for their continuing series on "Building Blocks".



HIGGINBOTHAM AWARD (For meritorious service to amateur radio generally, not necessarily only to AR magazine — $100)

To Roger Harrison VK2ZTB, for his article (jointly with Leo McNamara) on the solar cycle, and for his continuing support of amateur radio, both the hobby and the magazine.

1988 FEDERAL CONVENTION AGENDA MOTIONS proposed by VK4 and VK1

MOTION: That the Federal Council be seen to be a dynamic member-responsive body actively planning for the future.

PROPOSER'S COMMENTS: It is the duty of the Federal Council to establish policies that serve the long term interests of the Australian Amateur Radio Service. To this aim the Institute should encourage amateurs to utilise new modes, techniques and bands without neglecting the gains and expertise of the past.

Communicating such an image to members should be through the Federal News segment of the weekly Divisional News Broadcasts together with use of the Institute's monthly journal *Amateur Radio* and news releases to other amateur oriented publications. However, members have shown us recently that, on issues of concern, they have no hesitation in writing directly to the DOTC or politicians, thus indicating that they have no confidence in the Federal Council or that they do not appreciate its functions or even know of its existence.

These members have been allowed to believe the Institute is ineffectual, non-dynamic and remote. This poor perception of the WIA should be altered by more efficient public relations, not only to the important non-amateur population, but right down to the "grass-roots" level of membership.

* * *

MOTION: That all Federal Office Bearers Reports for the year ending December 31, with the exception of the Treasurer's Report, be published by the April issue of the Institute's journal. The audited Treasurer's Report is to be published by the July issue, together with the comprehensive report of the proceedings of the Annual Federal Convention.

PROPOSER'S COMMENTS: It is a requirement of most organisations that their members be fully informed. In this way all Institute members will be able to appreciate the vast amount of volunteer effort that is expended on their behalf.

The proceedings of the Federal Convention will be expedited as interested members throughout Australia will have had an opportunity to instruct their Federal Councillor as to their wishes and aspirations. Four hours Convention discussion time on the achievements of the past year should then be ample.

Because of auditing requirements, the Annual Treasurer's Report is not often available until after the printing deadline for the April edition of our journal. However, the July edition should also contain the Budget projections for the ensuing year.

* * *

MOTION: That the Wireless Institute of Australia Federal Executive establish a more effective presence in the Canberra region prior to WARC 1992.

PROPOSER'S COMMENTS: The cornerstone of the Institute's reason for existence is the continuing need to have a strong and close relationship with the Regulatory Authority (DOTC). In the years since the DOTC has moved to Canberra, DOTC personnel and conditions have altered and our strategy needs to be adjusted. Under no circumstances should we lose the close rapport built up over the years by our IARU representatives but, on a more mundane level, much time-consuming liaison work is required between Regulatory authorities and Federal Executive members who represent Australian amateurs.

* * *

MOTION: That the size, structure and location of the Federal Executive of the Wireless Institute of Australia be reviewed.

PROPOSER'S COMMENTS: It is quite apparent from the poor attendance that there may be too many Federal Executive members. Motion 83.07 increased the number of Federal Executive members from five to nine and the reasons applicable then may no longer be valid. A smaller number of members may increase their effectiveness and/or efficiency. Naturally, there is no intent to restrict volunteer Institute officials from attending any Federal Executive meeting.

The duties applicable to members of Federal Executive naturally vary according to the individual talents available. The administrative needs of the Australian amateur radio service has been a burden on the VK3 Division and this burden should be shared by other Divisions. With a restructuring of the Federal Executive, the practice of monthly meetings should be reviewed. Quarterly meetings held on weekends would, on a cost effective basis, allow members from other parts of Australia to contribute their skills.

It is desirable, but not essential for the Federal Executive to meet at the Federal Office. The Federal Secretary should attend all Federal Executive meetings at Institute expense.

* * *

MOTION: That the Wireless Institute of Australia seek an exclusive amateur allocation within our existing bands 420-450 MHz and 1240-1300 MHz as a matter of urgency.

PROPOSER'S COMMENTS: It is becoming more apparent that our UHF bands are under threat, in some countries. There is no reason to believe that similar threats will not occur in Australia. An example is the way in which the amateur service was treated recently in regard to the 2300-2450 MHz band.

The AR article, *Frequency Bands and Emissions*, page 12, November 1987, states that there are no current policies in relation to these bands.

The appropriate Government authorities must be advised as quickly as possible that exclusive allocations are sought in these bands. The request must be regularly and actively followed up, and DOTC left in no doubt that the amateur service does require such allocations.

* * *

MOTION: That the Wireless Institute of Australia develops band-plans for the amateur microwave bands and seeks exclusive allocations within those bands.

PROPOSER'S COMMENTS: No WIA policy exists for these bands according to page 12 of the November 1987 issue of *Amateur Radio*.

DOTC has indicated in the past that WIA band-plans will be taken into account when looking at the usage of various frequencies and bands.

DOTC's intentions to establish the Multi-Point Distribution Service in the 2300-2450 MHz band

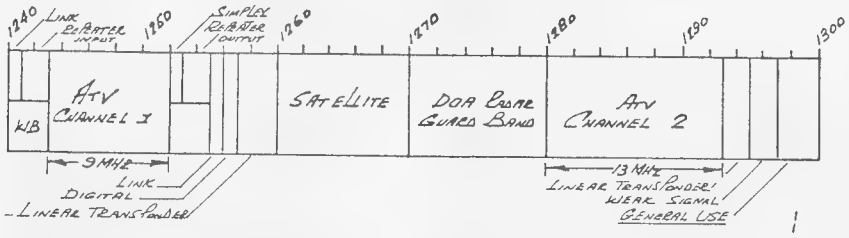


Figure 1 — Existing 23 centimetre Band- Plan.

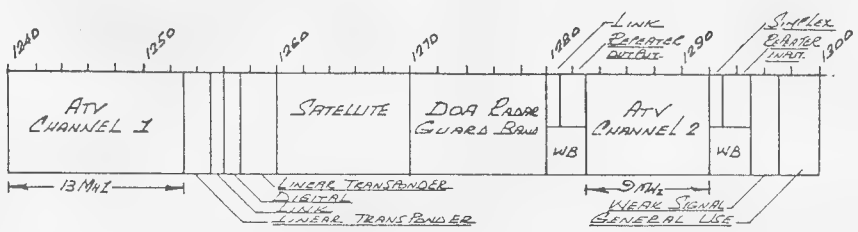


Figure 2 — Proposed 23 centimetre Band- Plan (to suit available commercial equipment which covers only 1260-1300 MHz).

See over page...

seems to indicate that DOTC takes notice on the basis that if we do not have a band-plan we are not using that band.

DOTC must be advised that we are developing band-plans for these bands and will be seeking exclusive allocations within the bands.

* * *

MOTION: That the Wireless Institute of Australia once again review the 1240-1300 MHz amateur band-plan.

PROPOSER'S COMMENTS: For the past six years the Institute has grappled with the 23 centimetre band-plan to satisfy the needs of the existing amateur users and to ensure that no interference is caused to the primary user, the DOTC airport radar on approximately 1275 MHz.

This band has suffered from lack of use by Australian amateurs since it is considered to be mainly an experimental band and a high degree of skill is required to build transceivers for it. However, a significant number of world-wide manufacturers now supply transceivers for use on the segment 1260-1300 MHz.

There is much interest in repeater usage in this band which the present interim band-plan inhibits. This VK4 23 centimetre band-plan will assist the ATV enthusiasts, who construct their own equipment, to mainly utilise the spectrum as far as possible away from any interference caused by the DOTC radar.

* * *

MOTION: That the Wireless Institute of Australia obtain a public relations consultant to plan and implement a campaign to increase membership.

PROPOSER'S COMMENTS: The Institute does not do enough to advertise its existence. The sporadic appearance of unimaginative minuscule advertisements in electronic publications other that *Amateur Radio* could hardly be called advertising. Not enough emphasis is placed on the positive things the Institute does for amateurs (representation to DOTC, running QSL Bureaus, Repeater Co-ordination, organising Contests to list only a few). Even a discrete reference to how non-members accept benefits provided by the WIA without paying anything thus becoming parasites on those amateurs who are members might be appropriate.

Public relations exercises are expensive, however a three or six month campaign should be within the reach of the WIA and could dramatically boost membership. If we don't try we will never know!

* * *

MOTION: That the Institute continue to press the DOTC to allow holders of the NAOCP qualification to operate on the 144.000 to 148.000 MHz band.

PROPOSER'S COMMENTS: There has been much discussion amongst the amateur fraternity over the past two years and it is now time for a decision.

* * *

MOTION: That the reports of the Future of Amateur Radio Working Party Committee *be an agenda item and to be allocated at least four hours discussion time.*

PROPOSER'S COMMENTS: The future of the Amateur Radio Service is of fundamental importance to the Institute and consideration of the results of this committee should not be inhibited by any lack of Convention time. All members are urged to consider the various papers published and, after thorough consideration of the issues raised, contact their Federal Councillor.

This is also a machinery motion that ensures that adequate time is provided for discussion on our future. At last year's Federal Convention, the topic *Future of Amateur Radio* was formally raised only after the Federal Convention had been convened for nearly 72 hours. This motion is to ensure that "prime time" will be allocated to this topic not "twilight time".

* * *

MOTION: That the Band Plan for 20 metres be amended so that the narrow band mode segment be extended to cover frequencies between 14.000 MHz to 14.120 MHz.

PROPOSER'S COMMENTS: The above motion is offered as a means of resolving the interference between packet beacon stations and the Travellers' Net run by VK6ART. Packet is a new mode of narrow band transmission, and the spread of narrow band usage above 14.100 demonstrates a need for more spectrum space for that mode. Both services are deserving and should be accommodated. Internal band-planning is up to us, but we can do nothing to enforce our plans overseas. The packet frequencies were initially imposed on Australian amateurs by overseas usage — quite indifferent to our band plans. It is logically unattractive to seek removal of the packet BBS as that will involve probably futile attempts to seek support from other organisations, and maybe the intervention of sovereign governments. There is no way of enforcing compliance with any WIA resolution by foreign nationals. On the other hand, it would be easy to QSY phone nets to say 14.125 MHz. This is not a case of this Division taking sides, but only one of recognising the frailty of international law.

Shorting Stick from an old Flyspray Dispenser

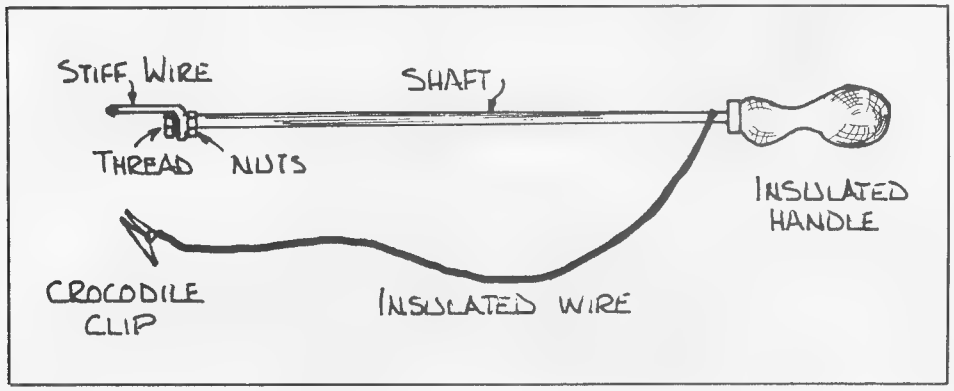
Peter Parker VK6NNN
C/- Witchcliffe Post Office, WA. 6286

A shorting stick can be useful for discharging capacitors.

This shorting stick is constructed from an old flyspray dispenser. The tube is removed and the rubber piston replaced with two nuts to hold the stiff wire.

The shaft should be cleaned and stranded insulated wire attached to the part of the shaft near the handle. A crocodile clip is joined to the other end of the wire.

In use the clip is attached to earth and the positive terminal of the capacitor is touched with the thick wire.



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SUMMARY OF "NOVICES ON TWO METRES" SURVEYS CONDUCTED BY DIVISIONS

The 1987 Federal Convention motion 87.09.13/1 has created considerable interest throughout the Institute. Both support for and opposition to the motion have been registered by amateurs communicating with their Divisions, the Federal Office, Amateur Radio *magazine, ARA magazine and to DOTC (formerly DOC).*

CONSULTATION

The background to novices on two-metres was included in *Amateur Radio* magazine as an insert and Divisions have consulted their membership in a number of ways to seek guidance on the issue. The following actions were taken within Divisions:

ACT — A questionnaire was supplied to those attending the August 1987 Divisional General Meeting, however, no provision was made for those not present at the meeting to record their opinions. Data was combined from several questions to provide responses corresponding to questions asked elsewhere. Some questions are not reported here as they have no bearing on the novice issue. The response is from 17 percent of members.

NSW — Two sets of statistics were supplied, the first from their May 1987 forum, the second from a VK2WI Broadcast item authorised by VK2AAR. The first set appears the more reliable. Again attendance at the forum was a pre-requisite to providing an opinion, although several clubs have submitted results from membership polls. The response was from about 2.5 percent of membership.

VIC — A comprehensive questionnaire (but perhaps biased in structure towards existing council policy), was included in AR and responses invited from members and non-members alike. The response was 23 percent of membership.

QLD — This Division used both their broadcast and newsletter, *QTC*, to inform members of the motion and solicit comment. Responses received, both in writing and over the air, totalled over five percent of Divisional strength. However, as many of these were club responses, the true membership return could be several times that figure.

SA — This Division, like Victoria, placed a questionnaire insert in AR. The range of questions was limited, seeking only responses to major issues and the poll achieved replies from 16 percent of members.

WA — The Federal Councillor reported a near unanimous agreement with the 1987 Convention motion following extensive discussion at the August 1987 Divisional General Meeting. As a consequence, no detailed questionnaire poll of members was considered necessary.

TAS — The Federal Councillor toured the island visiting all three branch meetings to obtain the views of the members, which was near unanimous support for the 1987 Convention motion. No detailed poll was considered necessary. The views expressed represent 33 percent of members.

SUMMARY OF FINDINGS

The 1987 Federal Convention Motion

The findings are:

Clearly for	3	(VK4, 6 & 7)
Marginally against	1	(VK5)
Clearly against	1	(VK3)
Implied against	2	(VK1 & 2)

The proposition could be considered marginally lost.

Need for a Common Band

The findings are:

For	6	(VK1, 2, 3, 6, & 7)
Implied (through rejection of "no change")	1	(VK5)

The responses indicate overwhelming support for the proposition.

For All of Two-Metres to Novices

For	2	(VK6 & 7)
Implied for	1	(VK4)
Marginally against	1	(VK1)
Clearly against	2	(VK2 & 3)

The proposition appears undecided, however, since it is the implementation of motion 87.09.13/1 it must be considered marginally lost.

For Part of Two-Metres to Novices

For	1	(VK3)
Implied for	3	(VK4, 6, & 7)
Marginally against	3	(VK1, 2, & 5)

The proposition is supported.

For Part of Six-Metres to Novices

For	1	(VK3)
Marginally against	2	(VK1, & 5)
Clearly against	2	(VK2, & 4)

The proposition is not supported.

For Part of 70 cm to Novices

For	3	(VK1, 2, & 3)
Clearly against	2	(VK4, & 5)

The proposition is supported.

Other Proposals

From responses from only a few Divisions there is:

- Strong support for restructuring the licence system (VK1 & 3).
- Strong support for VHF/UHF for novices (VK1, 2 & 3).
- No support for a licence grade below novice (VK1, 2 & 3).
- No support for data modes for novices (VK1 & 3).
- Ambivalence towards HF (28 MHz) for AOLCP (this contravenes the ITU Radio Regulations).

Consistency of Data

Near similar questions (or those repeated in a negative sense) yield reasonably consistent responses except the burning issue expressed in the positively supported theme; "Strongly support a common band for all licence classes on VHF/UHF provided it is 'not my' band".

CONCLUSIONS

There is not a majority of Divisions supporting motion 87.09.13/1.

The requirement for a common band is near unanimously supported.

Whilst there is not majority support for all of two-metres to be the common band, there is majority support for part of that band.

There is also majority support for part of the 70 cm band but not part of six-metres.

There is not support for a licence grade below novice, nor for data modes for novice licensees.

RECOMMENDATIONS

The President's draft letter to DOTC be recast to reflect and include the findings above and a request be made for part of the two-metre band and part of the 70 cm band for novice licensees. The FM portions of each band are recommended.

This summary report be circulated to Federal Councillors and published in edited form in AR.

The Future of the Amateur Radio Working Party be directed to include the findings of this summary report in their deliberations.

Edited from the Working Party's report of October 6, 1987, by Ron Henderson, December 12, 1987.

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Novice Notes

A HANDY QUARTZ CRYSTAL CHECKER

Drew Diamond VK3XU
'Nar-Meian', Gatters Road, Wonga Park, Vic. 3115

From time to time, we find it necessary to check a crystal for activity and/or frequency. For instance, in trouble-shooting an oscillator circuit, it would be helpful to know if the crystal was good before checking elsewhere in the circuit. By making the checker pocket-size and battery powered, we may take it along to 'white elephant' sales or parts shops so that a crystal may be given at least a functional check before buying. If a frequency measuring device is available in the shack or workshop, such as a counter or calibrated receiver, it is possible to make a reasonably accurate measurement of the crystal frequency. With an appropriate crystal; the device may also be used as a simple signal source for receiver work, or as a marker generator to identify a specific frequency where no other accurate calibration method is available.

The great difficulty with a device of this kind is in finding a circuit which will properly excite as wide a range of crystals as possible. After much delving and experimenting, I was not able to produce a simple "universal" circuit which would drive crystals marked in the 100 kHz to 24 MHz range. Upon reflection it will probably be agreed that most fundamental crystals for radio, electronics and computer work lie in the range of perhaps 1.8 to 24 MHz; so a circuit providing at least this range was aimed for. With the addition of a switch to connect an extra capacitor, crystals down to 455 kHz (the lowest in my collection) may be checked. Overtone crystals; eg 27 MHz or 36 MHz, etc, will be excited on their fundamental frequency; ie 9 and 12 MHz respectively. So, the final circuit arrangement should prove useful in checking the majority of crystals used by amateurs, experimenters and computer buffs.

CIRCUIT DESCRIPTION

The final circuit was empirically designed, and is based on the Colpitts configuration. For fundamental crystals in the HF range; from about 2 MHz to 24 MHz, the capacitive voltage divider consists of C1 in series with C2. For crystals in the MF range, from about 0.5 MHz to 2 MHz, C3 is switched in parallel with C2 to optimise the divider ratio for lower frequency crystals. When the crystal is oscillating, the AC voltage developed across R2 — L1 in series is applied to the voltage doubler C5, D1, D2, C6. The positive voltage thus established across C6 injects a current through R3 into the base of Q2, whose collector current flows as a direct result. The LED in series with Q2 and R4 will illuminate in rough proportion to base current, and by implication indicates crystal activity — the more active the crystal, the brighter the LED.

CONSTRUCTION

A small printed wiring board accommodates most of the components, although any desired form of construction may be employed to suit individual resources. The crystal connection method may also be left to individual taste. To accommodate all crystal types would require up to five different kinds of connector. It is hard enough these days buying a style K connector, let alone the more exotic types. The photograph shows my own suggested approach; two ordinary banana sockets, spaced 0.75 inch (traditional spacing going back to the early days of radio, and still in use). Only some of the very old style crystals may be directly inserted. However, it is a simple matter of plugging paper clips or similar into the rather large holes to make a 'universal' connection to the crystal being tested.

The checker may be housed in a plastic or metal box measuring about 120 x 55 x 30 mm. The banana sockets also serve to attach the circuit board to the lid of the box as shown. If the nuts are used, make sure that the nut securing the 'hot' banana socket (marked Y on the PWB) clears the nearby earthy track. The LED has been placed at the approximate geographic centre of the PWB, so the lid needs a small corresponding hole for the LED to protrude through. The two switches and the output connector may be mounted on the lower part of the lid. Polarities of the FET, transistor, diodes and battery must be strictly observed. With the box shown, it will be found that the nine volt battery will fit snugly in the lower part of the box. Other boxes may require the battery to be fixed in position be some method, perhaps with a blob of 'blutak'.

If the suggested construction method is adopted; the components on the circuit board may only project to a height of about seven millimetres in order to clear the lid. If any of your components are higher than this, it should only be necessary to lay them over to one side (eg some makes of disc capacitors and the RFC may need this treatment).

For the visually handicapped user, there is room to include a piezo buzzer to provide an audible indication. The piezo is connected in parallel with the LED as shown on the circuit.

The method of labelling the checker must be left to individual resources. Mine has been done with Letraset ® — available from newsagencies and stationers. A light coat of clear lacquer should be applied to prevent the letters from rubbing off in use (remember to test your lacquer by applying a small amount to the inside of a plastic box to make sure that there is no 'reaction').

* Registered trade name.

OPERATION

The two leads of the crystal are connected and the checker switched on. A good crystal will oscillate and cause the LED to glow (and the piezo will 'beep' if fitted). As already mentioned; the brightness of the LED gives some indication of crystal activity. The division between 'MF' and 'HF' crystals is not sharp, so if a particular

A suggested approach for connectors.

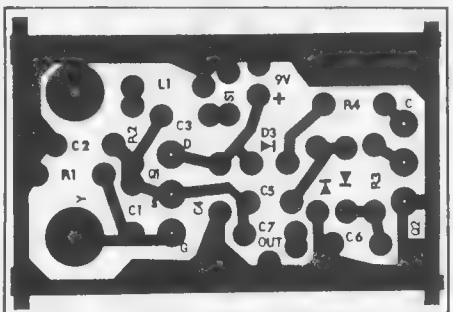
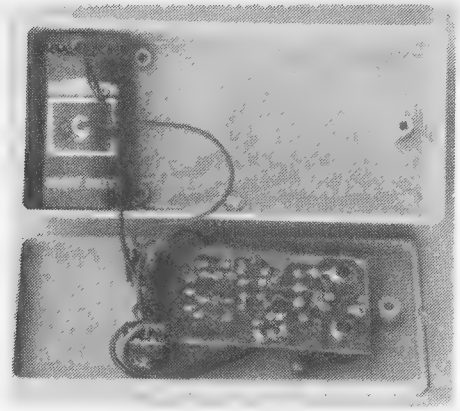
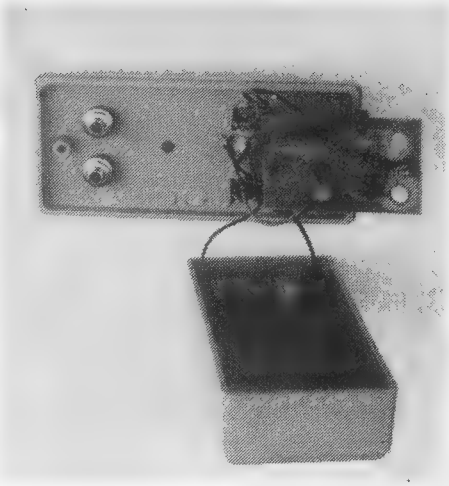


Figure 1: Printed Circuit Board.





crystal at say 1.8 MHz will not oscillate in the MF position, then try the HF position. It may be noted that some really active crystals will oscillate with only the 'hot' lead connected. Stray capacitance to the metal parts of the checker and hand capacitance are supplying the return path for the crystal under these circumstances.

To use the checker as a signal source; connect your crystal of appropriate frequency, and place the checker near the receiver input connector. It should not be necessary to make a direct connection to the receiver input. A small radiator, such as a piece of stiff wire may be inserted into the output connector to radiate a signal into a nearby receiver. The experimenter will soon devise ways of exploiting the possibilities offered.

PROBLEMS

If your checker will not work, even after fruitless attempts to find the trouble; please write to me about it and I will extend any reasonable amount of help necessary. One problem that did occur with mine was difficulties with a certain brand of radio frequency choke (RFC) used for L1. The ones that look like a one watt resistor have a bad habit of going open, even after careful soldering. A small 2.5 mH 'dog bone' RFC is available from some electronics shops. A single pie scramble wound choke, although larger, will also suit. The circuit will work without this choke by connecting R2 to signal ground. However, the range of frequencies and ability to excite sluggish crystals will not be as good.

PARTS

All the parts used in this project are readily available. If you wish to buy it in kit form, Ian J Truscott's Electronic World, 30 Lacey Street, Croydon, Vic. 3136, have agreed to put some kits together. Contact them direct for further information re price etc.

REFERENCES AND FURTHER READING

1 FRANSEN. Universal Oscillator Circuit. *Ham Radio* magazine (USA), April 1986.

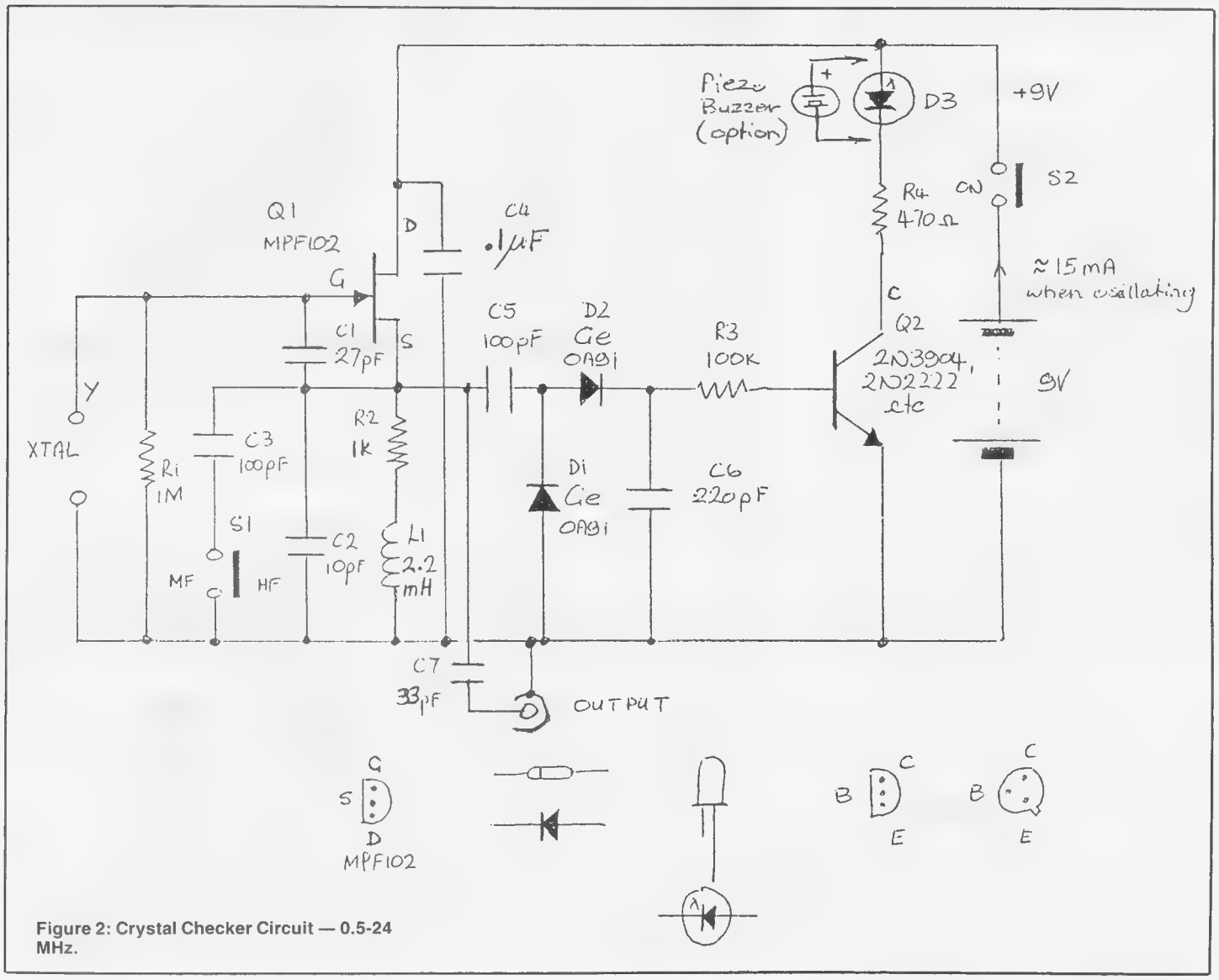


Figure 2: Crystal Checker Circuit — 0.5-24 MHz.

2 MATTHEYS. Crystal Oscillator Circuits. ISBN 0-47-87401-9.
3 DOBBS. Kitchen Table Technology (Crystal Checker). *Short Wave Magazine*, September 1983.

PARTS LIST

Capacitors
C1 27 pF NPO Ceramic
C2 10 pF NPO Ceramic
C3, C5 100 pF Ceramic
C4 0.1 uF Monolithic
C6 220 pF Ceramic
C7 33 pF Ceramic

Resistors
R1 1 Mohm, 1/8W, 5 percent
R2 1 kohm, 1/8W, 5 percent
R3 100 kohm, 1/8W, 5 percent
R4 470 ohm, 1/8W, 5 percent

Semi-conductors
D1, D2 Germanium Diode, OA91, etc
D3 LED, PC mount, any colour
Q1 FET, MPF102
Q2 Transistor, 2N3904, 2N2222, etc

Inductors
L1 2.2 or 2.5 mH RFC (avoid resistor shaped choke)

Hardware
PWB, box to suit (Supertronic PP-4), banana sockets (2), output connector (RCA), 9V battery and connector, miniature single pole switches (2), alligator clips (2), hook-up wire, lettering materials, piezo buzzer (optional).

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REMEMBER

When inquiring about products published in AR, always mention where you read of the product!

ARE YOU THINKING OF
EXTENDING ?
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Australia-wide Appeal for QSL Cards

The WIA (Victorian Division) QSL card collection has been established, and having regard to the interest shown by amateurs outside Victoria, the appeal for cards is now extended to include amateurs throughout Australia.

Not all radio enthusiasts are interested in DX and QSL cards. Radio entails a broad spectrum of knowledge and techniques and many amateurs tend to concentrate on their own particular field of interest, and that is how it should be! For many however, a major interest lies in the collection of QSL cards from all over the world.

Many, particularly pre-WWII QSLs, are fast becoming historic items. It is a long time since we have seen a PK from Java or a K6 from Hawaii, let alone an AU from Siberia or an XU from China.

Ninety percent of QSLs are kept for a short period and then consigned to the rubbish heap. They are enjoyed by the amateur himself (or herself) but by few others. The establishment of a QSL collection enables not only one person to view such history, but for hundreds to do so, both now and well into the future.

In October 1987, over 800 QSLs were exhibited at the Ballarat Amateur Convention and created considerable interest. A selection of cards received are displayed on poster boards. Other cards are indexed and filed.

In the near future it is hoped to have over 2000 selected QSLs mounted for display. These mounted displays may be borrowed by school radio clubs and exhibition organisers.

Displays depict ARRL DXCC countries, together with those of a thematic nature; ships, space exploration, amateurs and their equipment, sport, etc. The aim is to engender interest in the hobby and maximise the use of cards people are good enough to donate. The collection is not confined to early QSLs and contains many of attractive design as well as modern DXpedition cards and rare (usually commemorative) prefixes.

Notwithstanding the generous donation of thousands of QSLs from amateurs from both Victoria and interstate, there are many gaps in the WIA collection.

We appeal to any DXer to donate as many QSLs to the appeal as possible.

A number of people have donated whole collections (after rummaging through dusty old boxes in the garage), whilst others have kept their DXCC and given the remainder, *but any donation, however small, is indeed welcome.* All donations are acknowledged through the Sunday Broadcasts and generally appear in AR too.

If you know of old timers, in particular, who have QSLs they may be able to donate, the WIA would be grateful if you would advise us so that a formal request may be made.

A minor difficulty is delivery of the cards. These can be collected in the Melbourne metropolitan area, or if small quantities only are involved, they may be posted direct to the Honorary Curator, Ken Matchett VK3TL, PO Box 1, Seville, Vic. 3139, Telephone (059) 64 3721. For large numbers of cards, other arrangements can be made directly with Ken. Alternatively, if you let the curator know your address he may be able to arrange transport by a WIA member who is passing through your area en route to Melbourne. This applies to Victorian country and interstate readers.

Please do not destroy your QSLs, modern or ancient, for however commonplace they may appear to you, there is sure to be several the WIA collection needs. Not all QSLs can find a place in a mounted collection; however after recording, each is boxed according to country of origin. If, in the future appeals for QSLs be other interested groups are made, use can be made of such cards.

What can you do to help?

News about the progress of the collection, together with the story of some of the more interesting QSLs will appear in future issues of AR.

VHF COMMUNICATIONS MAGAZINE

The WIRELESS INSTITUTE OF AUSTRALIA are the Australian agents for **VHF COMMUNICATIONS MAGAZINE,** English translation of the magazine from Germany.

This popular magazine is produced four times a year and includes details of excellent kits for purchase from Germany.

1988 SUBSCRIPTIONS: **AIRMAIL $25.25** **SURFACE MAIL $21.75**

SENT DIRECT FROM GERMANY

Also, limited supplies of back issues to 1970 are available.
1970-79 — $3.00 each, plus post.
1980-85 — $3.50 each plus post.
1986 — $5.00 each, plus post.
1987-1988 — $5.50 each, plus post.

Good quality binders for the magazine are available at $8.00 plus post.

Break In (NZART Magazine) — 1988 Subscription $A51.00

Inquiries:

WIA EXECUTIVE OFFICE
PO BOX 300
CAULFIELD SOUTH, VIC. 3162.

PH: (03) 528 5962 **(BET. 10.00 am — 4.00 pm)**

DARWIN RADIO CLUB's 21st BIRTHDAY CELEBRATION

Doug McArthur VK3UM (ex-VK8KK)
30 Rollaway Rise, Chirnside Park, Vic. 3116

Dedicated to all those who "went through it" and have never had a chance to return and to those who returned to rebuild their future.

It has been over 12 years since I was last in Darwin and, even now, I can vividly recall the events of *Cyclone Tracey*. The devastation and despair that followed one of Australia's most traumatic events will never escape my memory. The sheer extent of the tragedy was impossible to convey to others who were not part of the happening. Even today, many of the things that followed the Cyclone still cannot be told.

When the opportunity presented itself to combine business with the pleasure in joining the Darwin Radio Club's (DARC) 21st Birthday celebrations I immediately made the necessary preparations to partake of the occasion.

On the way, via Sydney, Brisbane, Townsville and Cairns, I was not able to find the time to purchase a couple of pairs of shorts for the occasion (all previous pairs had long since *shrunk in the wash!*) so it was with some fear and trepidation that, when the aircraft door opened, the now "Southerner" would fast expire in the heat. Approaching from the east the familiar meandering outline of the Adelaide River was etched in the visibly sodden surrounds which, even if one was unaware of the aircraft pitching through the storm laden sky, indicated that the "Wet Season" had arrived a little earlier than normal. What was an immediate surprise was the extent of the farms now established so far from town. That was all crocodile country as I recalled.

Finally, when the aircraft landed and the doors slid open, one could taste that familiar Darwin air! The Darwin Airport had indeed changed! Yes, they had removed the Cessna 310 off the top of the terminal building and they had also replaced the galvanised iron cladding! Everything else appeared exactly the same! This was later proved incorrect as Barry VK8DI, who kindly met me, proudly pointed to their latest addition in modern technology — the baggage carousel.

Ah. . .it was great to be back and to know things are not all as would first appear to our front door tourists.

The drive to Rapid Creek was indeed an eye-opener. Trees were now standing vertical and they even had leaves! (After the cyclone, there was hardly a tree left standing an the extent of regrowth is truly amazing). Past the familiar land mark of the missiles guarding the RAAF base entrance. They had obviously been stood up again so it was heartening to know our northern defence had been restored to normality.

Approaching Kamikaze Corner (alias Bagot Road and the Stuart Highway) things had indeed changed. Here, in all its glory, was a magnificant overpass circumnavigated all of the past traffic jams. Not only that, further down was a connecting road between Fanny Bay, behind the racecourse and Ludmilla, that ran all the way to Nightcliffe!

It did not take long for the first scheduled event of the Darwin Radio Club to begin. First was an official dinner held at a prestigeous restaurant in Parap. This was obviously a high-class affair as thongs and T shirts were not permitted! (Incidentally, Parap was previously known as Parap Parap and is adjacent to Ross-Smith Avenue, which was the original Darwin Air Strip). The committee had obviously thought of everything and warned mine hosts for we had the place to ourselves. The attendance was indeed fantastic with over 39 amateurs and their wives and friends enjoying themselves.

The following call signs were present:
Terry VKs 8TA, Judy and Barry 8DI, Doug 3UM (ex 8KK), Juliet and Barry 8ZCF, Dianne and Larry 8LM, Heather and Henry 8NHN, Bill 6AOD (ex 8OD), Maureen and Bob 8ZRJ, Robin and Ray 8RB, Anne and Bill (Spud) 8ZWM, Gloria and Jim 8JJ, Ruth and Henry 8HA, Lorraine and Trevor 8CO, Wendy 8YL and OM Garry 8BN, Graham 1BGG (ex 8GB), Frank 8FT, Janice and Garry 8ZGT and Ron 8RW.

Apologies were received from Bev (my wife), Col 2JC (ex 8CM), David 3AUU (ex 8AU), Terry 3ZTW (ex 8ZTW).

Barry VK8DI, was Master of Ceremonies for the evening, thus taking some of the pressure off the President, Bill (Spud) VK8ZWM, who is always short of a word! In fact, as it transpired later, someone else had prepared an outline for his speech!

The evening was a resounding success where each of the visitors were invited to recall the serious and lighter moments of the Club's past history. Original foundation members of the DARC, Harry VKs 8HA, Barry 8DI and Terry 8TA, also related some stories which caused many to choke on their oysters. As one speaker said, "everybody is still the same, only our children are older!". The evening terminated in the very early hours of the morning when our hosts slowly extinguished the lighting and ushered the revelers to the footpath.

The following day (Saturday) Terry VK8TA, insisted that I witness him playing the E Flat Tuba in the Darwin Brass Band, so dutiful I borrowed some earplugs guaranteed to provide 100 dB of attenuation and proceeded to the Darwin RSL Club. It is true to report that Terry can certainly handle the tuba better than he does the Morse key and the earplugs were not required. I would however, have liked to watch him march the streets during a typical Darwin downpour! At least he could walk inside the instrument!

Saturday evening heralded the DARC barbeque at the Club rooms. Things have certainly changed here and the new venue is magnificent. It consists of a very large, fully air-conditioned room of a size suitable for holding classes or functions, with enough space remaining for the transmitting station. The site is part of a multi-functional sporting complex near the Waratah Sports Oval. DARC has exclusive use of the room and it appears, at long last, the club has a permanent home. Outside a fully retractable 60 foot tower supports a TH3JR and other HF antennas, whilst on the roof a series of beacon antennas and other VHF/UHF "word perches" grace the skyline.

Spud VK8ZWM and Terry VK8TA, were chefs for the evening in charge of the barbeque and turned out steaks in true Territory style. The ladies of the club augmented the feast with salads and sweets.

There were around 60 members and guests attending, and judging by the number of harmonics present, the club must be assured of a healthy future. The feature of the night was the cutting of a very large birthday cake following the "tall tales" and speeches. Unfortunately, due to a slight technical problem the magnificant Honour Board, detailing the foundation members, past presidents and Life Member was not unveiled at this time and had to be left until the following day.

Following the barbeque many accepted the kind invitation from Larry and Dianne VK8LM, of Nightcliffe, whose magnificent abode boasts an in-ground swimming pool situated in a setting which we would all relate to a tropical paradise. The harmonics, who prior to this were under threat of not getting their swim if they did not behave at the barbeque, set about emptying the pool with their splashing, whilst the adults pursued the more serious endeavours of socialising. Larry revealed that he had a problem with his six metre linear and his shack was quickly filled with expertise offering to locate the problem. Talk about brave, even with the District Radio Inspector being present, Larry unveiled a monster capable of producing receiver front end overload in Japan! It is unfortunate to report that a string of electrolytics had expired and he is faced with a considerable problem of obtaining replacements. It was again a great night and the tall stories continued until the very early hours of the morning.

Sunday dawned (seemingly just after we closed our eyes) and the celebrations continued. This time it was a mystery bus tour. Mystery because even Terry VK8TA, was unsure where we were going. The object was to visit all the haunts where the DARC previously held their meetings, established beacons and held memorable field days.

The tour began at the present club room and went to the old incinerator site adjacent to Bishop Street. This has now been transformed into a training centre for the Northern Territory Volunteer Emergency Services. A tour was kindly arranged by Kerrie Adams and Peter Teece, who proudly displayed their latest set-up. Groans were uttered by many who recalled the sufferings of first establishing an amateur station in far from ideal surroundings.

Next it was to East Point Reserve via the old Civil Defence Headquarters (devastated by the cyclone and never restored), and then to what was the old high school. Approaching East Point I was dismayed to see that the infamous Fanny Bay Hotel and the old Fanny Bay Goal (now a museum), had not been restored (the latter, in hindsight, was a blessing).

East Point Reserve, a few metres above the shore of Darwin Harbour, has a history of its own. It was here during World War II that large gun emplacements were established. These are currently being restored to their former "glory", The mammoth concrete structures are in as good a condition now as they where when first constructed. Not even Cyclone Tracey was able to inflict damage to these edifices. One of the concrete support buildings was originally used as a meeting and beacon site for the DARC. Members were asked to take their own chairs to the club meetings (along with insect repellent). Getting mains power to this site was a battle with incredible bureaucratic red tape which took almost two years to come to completion. It was here that the first

intelligent six metre beacon operated until that infamous Christmas night.

This was also the site of numerous field days as the dream QTH is surrounded on three sides by sea. Members scurried about pointing out the old concrete slabs painfully laid in bygone-years, still containing the bolt holes that supported some of the most magnificent antennas imaginable? In later years the club restored yet another (larger?) building which provided shelter for its members. The whole area has now been turned into a historical museum frequented by the many tourists visiting the area and is surely worthy of a diversion for anyone visiting Darwin.

This tour was virtually the end of the official functions arrange by the club. Readers who worked VK8DA, the official Club Station, during the celebration period are entitled to a commemoration certificate, see details in October 1987 AR. The certificate is a worthy addition to any shack wall.

The Darwin Amateur Radio Club is certainly a most radio and socially active club. They maintain both six metre (52.200 MHz) and two metre (144.480 MHz beacons and by this time they will probably have the 10 metre beacon (28.268 MHz) operational. All beacons transmit under the call sign of VK8VF. In addition, they also operate two VHF (VK8RTE 146.400/147.00 MHz and VK8RDA 146.100/146.700 MHz) repeaters situated at Palmerston and McMillan Road. Coverage is extensive and VK8RTE can be worked as far away as the Adelaide River. Not satisfied with the VHF repeaters, a UHF system is ready for installation on the Maraki Flats (in the city) operating on 433.275/438.275 MHz.

The current committee members are President Spud VK8ZWM, Vice-President Ray VK8RB, Secretary Larry VK8LM, Treasurer Henry VK8HA, Club Station Manager Frank VK8FT, Magazine Editor (*Ground Wave*) Henry VK8NHN, and Committee Members Terry VK8TA and Barry VK8DI. The club postal address if PO Box 37317m Winnellie, NT. 5789. Should you visit Darwin they will certainly make you most welcome.

For those readers who have not been back since the cyclone, you will be pleased to learn that, although the character of the place has certainly changed, the basic social philosophy is much the same. If ever there was a place where a successful integration of a multi-cultural society exists, Darwin is that place.

The city is fully restored, the suburbs expanded and the population returned to well over 60 000. Prices seem reasonable when compared with the southern States although vegetables are still expensive. Petrol prices were certainly no more expensive than in Melbourne.

Housing is much improved with the new building codes. Gone are the rows of stereo look-a-likes which are now replaced with a mix of ground and elevated ascetically pleasing homes surrounded by tropical gardens. Even the insects have been tamed for it could once be said that you could sit outside and swat insects all night and never hit two the same! Not so now!

It is not just any city that could recover after such devastation, to emerge and expand the way Darwin has in such a relatively short time.

Amateur radio is thriving at Australia's front door and they, although they would not wish to talk about it, are prepared for any eventuality (as they were in the past), should such an occassion occur. We all hope it will not be necessary.

The DARC, flushed with their 21st celebration success, are already planning an even bigger and better 25th Silver Anniversary celebration. Mark November 1991 down in your calendar!

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● ● See next month's AR for a Pictorial Spread of the 21st Celebrations ● ●

WIA DIVISIONAL BROADCASTS

Following are the times and frequencies of the Divisional Weekly News Broadcasts.

AUSTRALIAN CAPITAL TERRITORY

Broadcasts are held on Sundays at 8 pm local time on the following frequencies:

3.570 MHz	LSB
28.485 MHz	USB
52.075 MHz	USB
52.525 MHz	FM Secondary
146.900 MHz	FM Channel 6, Secondary, VK1RAC
146.950 MHz	FM Channel 7, VK1RGI, Ginini
438.375 MHz	FM Secondary, VK1RIR
438.525 MHz	FM Primary, VK1RGI

On Mondays, there is a re-broadcast at 8 pm local time, on 146.950 MHz, via VK1RGI, provided no meeting is held on such Mondays. If there is a meeting on a Monday night the re-broadcast takes place on Tuesday at 8 pm.

NEW SOUTH WALES

These are conducted from the Divisional Station, VK2WI, at Dural on Sundays at 1100 and 1930 hours local time. Both sessions — 1.845, 3.595, 28.320, 52.120, 52.525, 144.120 MHz are via repeater channels 6650 Western Blue Mountains, 6725 Gosford, 6850 Wollongong, 7000 Sydney, 7100 Lake Macquarie, and 8525 Sydney.

For the 1100 hours transmission there are additional sessions on 7.146 MHz from Dural, and 3.585 MHz from Newcastle.

There may be relays through the following repeaters — 6700 Orange, 6800 Lismore, 6800 Western Plains, and some ATV repeater systems.

For those unable to listen at these times there is a telephone news highlights recording of about two minutes duration on (02) 651 1489, Monday to Saturday.

VICTORIA

The Victorian Division's broadcast is held every Sunday morning at 1030 hours local time on the following frequencies:

1.840 MHz	SSB
3.615 MHz	SSB
7.085 MHz	SSB (courtesy of Ric VK3RC)
52.525 MHz	FM
144.200 MHz	SSB
146.850 MHz	FM (via the Mount Macedon repeater, VK3RMM)

A call-back is conducted shortly after the broadcast on 80 metres (3.615 MHz), 40 metres (7.085 MHz) and on the two metre repeater, VK3RMM, (146.850 MHz).

All inclusions for the broadcast should be addressed to: Broadcast News, PO Box 260, Cranbourne, Vic. 3877.

Members may advertise items wanted or for sale on the broadcast. The name and address of the advertiser is withheld and all inquiries are directed to the Victorian Divisional Office, 412 Brunswick Street, Fitzroy, telephone (03) 417 3535 between the hours of 10 am and 3 pm Monday to Thursday. All advertisements should also be directed, in writing, to the above office.

Further inquiries regarding the broadcast should be directed to: Rob Hailey VK3XLZ, PO Box 477, Croydon, Vic. 3136.

QUEENSLAND

This broadcast is transmitted on VK4WIA, frequencies being:
1.825, 3.605, 7.118, 10.135, 14.142, 18.120, 21.175, and 28.400 MHz. The broadcast is also transmitted on two metre repeaters VK4RBN, VK4RGC, VK4RSC and many regional repeaters. Also UHF repeater VK4RBC.

Broadcasts are held on Sundays at 2300 UTC (tuning tape commences at 2255 UTC on HF outlets).

A repeat broadcast is conducted on Monday at 0930 UTC on 3.605 MHz and two metre repeater VK4RAG, Brisbane City. The call sign is VK4WIA.

There is no broadcast on the Remembrance Day Contest weekend and over the Christmas/New Year period.

SOUTH AUSTRALIA

The broadcast commences at 9.00 am local time on Sundays and can be heard on the following frequencies:

1.820 MHz	AM
3.550 MHz	
7.095 MHz	AM
14.175 MHz	
28.470 MHz	
53.100 MHz	AM
145.000 MHz	AM
147.000 MHz	Repeater
579.000 MHz	ATV Repeater
REGIONAL RELAYS	
3.555 MHz	Darwin
146.500 MHz	Darwin
146.650 MHz	Naracoorte Repeater
146.700 MHz	Port Pirie Repeater
146.900 MHz	Mount Gambier Repeater
438.425 MHz	Barossa Valley Repeater
444.250 MHz	Mid-north Repeater

WESTERN AUSTRALIA

These broadcasts are held on VK6WIA at 0130 UTC, Sundays on the following frequencies:
Via the Perth repeater VK6RAP, Channel 6700 linked to VK6RUF Channel 8525, VK6RBY (6900), VK6RBN (6750), to HF relays 3.560, 3.582, 7.075, 10.147, 14.110 (N), 14.175 (E), 21.185, 28.485 and VHF 52.080 MHz.

A repeat broadcast is held at 1100 UTC on VK6WIA, via 144 and 432 MHz repeaters as at 0130 UTC, but with only 3.560 MHz relayed on HF.

TASMANIA

The broadcasts are originated from Hobart on two metres FM via the Mount Wellington Repeater (6700) and there are links to the northern repeater on Mount Barrow (7000) and the north-western repeater at Ulverstone (6750). Relays are carried on 3.570 MHz and 7.090 MHz at the instruction of the Divisional Council. Three additional relays are carried voluntarily on 144.100 MHz SSB, 52.100 MHz and 14.140 MHz.

Broadcast times are 0930 hours local on Sunday mornings. There is a possibility of a repeat broadcast at 1930 hours local time on Tuesday evenings on 80 metres only (listen to the Sunday morning broadcast for further details).

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OLD EXAMINATION PAPERS

The following papers are published courtesy of DOC. They are some of a series of yester-year papers which are published so readers may test themselves. Would the OTs still be able to pass with flying colours? How would the newcomers go with this type of exam?

COMMONWEALTH OF AUSTRALIA
POSTMASTER-GENERAL'S DEPARTMENT
AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY
THEORY AND REGULATIONS

JANUARY 1937

THEORY

1 (a) Calculate the length of a "Hertz" antenna that would be suitable for operation on all three bands of 80, 40 and 20 metres. Give your answer in feet and show full working.
(b) Indicate by the use of simple diagrams the standing waves that would exist for each of the three bands.

2 Show a full schematic diagram, without power supply, of a super- heterodyne receiver, suitable for the reception of unmodulated CW telegraphy signals and explain the function of each stage.

3 Given a power supply of 500 volts DC, what wattage would be dissipated in a "bleeder" resistance placed across the output if the current flowing through it is 20 milliamperes, and what would be the value of the resistance?

4 (a) Draw a circuit of a two-stage transmitter, crystal controlled, including power supply.
(b) Describe briefly the "piezo-electric" effect of the crystal.

5 Give a brief outline of the process of tuning a MOPA transmitter and state what apparatus you would use. How would you determine that the power amplifier was properly neutralised?

6 Quote three of the major causes of frequency instability in a transmitter and explain the method or methods which should be adopted for their prevention.

7 What is the difference in construction between a voltmeter and a milliammeter of the moving-coil type? Explain the reason for the difference.

REGULATIONS

1 What are the Regulation requirements regarding secrecy of correspondence?

2 When it becomes necessary to transmit test signals, explain the procedure to be followed.

3 What class of messages or communications are amateurs allowed to exchange?

Time allowed — 3 hours
POSTMASTER-GENERAL'S DEPARTMENT
EXAMINATION FOR AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY
THEORY — MAY 1927

(Answers need only be given to seven questions — the first five must be attempted).

1 Draw a diagram of a receiver capable of being used on the various amateur wavebands, setting out the values of the respective components.

2 Give a diagram of a Telephone Transmitter utilising one valve as Oscillator and one as Modulator. State the amount of current necessary to work the installation at 7 watts measured in the anode circuit of the Oscillator.

3 Explain briefly the function each piece of apparatus performs in the circuit drawn by you in answer to Question No 2.

4 What are the faults common in an ordinary lead accumulator and what action may be taken to remedy same.

5 State what you know of the advantages and disadvantages of crystal control in Valve transmitters.

6 State what you know of the means adopted to eliminate the use of batteries in Wireless receivers employing valves, giving circuit.

7 Define the following terms:

Absorption
Dielectric Constant
Impedance
Space Charge
Decrement
A periodic Aerial

8 How may the overall efficiency of an installation be proved. Give example.

9 Explain the function of a Grid Condenser.

10 What is meant by Choke or Anode control in a radiophone set and how is it obtained.

COMMONWEALTH OF AUSTRALIA
POSTMASTER-GENERAL'S DEPARTMENT
AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY

SECTION M (i) Theory

SEPTEMBER 1944

Time allowed — 2½ hours
NOTE — Seven questions only to be attempted

1 What is meant by "tracking" as applied to a radio receiver? In the case of tuned radio-frequency amplifier stages, what requirements must be met for correct tracking?

2 Describe the construction of an intermediate-frequency transformer. How are the gain and stability of the transformer affected by the types of coils and condensers used?

3 Compare high-vacuum rectifiers and mercury-vapour rectifiers in respect of voltage drop. What precautions must be taken when mercury-vapor rectifiers are to be operated in parallel?

4 What is meant by a vertically polarised wave? Describe in general terms the relationship of the range of the ground wave to the frequency of the transmission.

5 What is the general effect of increasing the length of an antenna, in terms of half wavelengths, on its directive pattern? What is the effect on the radiation resistance?

6 Draw a circuit diagram showing anode modulation of a neutralised triode Class-C amplifier, using a Class-B modulator. If a Class-C amplifier is to have a linear modulation characteristic, what general operating conditions are necessary?

7 An inductance of 0.5 henry and a capacity of 0.05 microfarad are connected in series. What is the total reactance of the circuit at a frequency of 1000 cycles per second?

8 Give the meanings of the following terms as applied to thermionic valves:
(a) Characteristic curves; (b) Interelectrode capacity; (c) anode-current cut-off point; (d) Grid bias.

9 Describe the operation of the moving-coil and moving-iron meters, and compare their suitability for small direct current measurements.

VHF UHF — an expanding world

Eric Jamieson VK5LP
8 West Terrace, Meningie, SA. 5264

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50 005	H44HIR	*Honiara*
50.010	JA2IGY	*Mie*
50.022	ZS6PW	*Pretoria*
50.075	VS6SIX	*Hong Kong*
50.100	KG6DX	*Guam* [1]
52.013	P29BPL	*Port Moresby* [2]
52 100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.310	ZL3MHF	*Hornby*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.330	VK3RGG	*Geelong*
52.345	VK4ABP	*Longreach*
52.350	VK6RTU	*Kalgoorlie*
52.370	VK7RST	*Hobart*
52.418	VK0MA	*Mawson* [3]
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52 435	VK3RMV	*Hamilton* [4]
52 440	VK4RTL	*Townsville*
52 445	VK4RIK	*Cairns*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52 470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
144.022	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley*
144.445	VK4RIK	*Cairns*
144.445	VK4RTL	*Townsville*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144 480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
144.950	VK3RCW	*Melbourne*
145.000	VK6RPH	*Perth*
432.066	VK6RBS	*Busselton*
432 160	VK6RPR	*Nedlands*
432.410	VK1RBC	*Canberra*
432.410	VK6RTT	*Wickham*
432.420	VK2RSY	*Sydney*
432.440	VK4RBB	*Brisbane*
432.445	VK4RIK	*Cairns*
432.445	VK4RTL	*Townsville*
432.450	VK3RAI	*MacLeod*
432.535	VK3RMB	*Mount Buninyong*
432.540	VK4RAR	*Rockhampton* [5]
1296.198	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.445	VK4RIK	*Cairns*
1296.480	VK6RPR	*Nedlands*
10300.000	VK6RVF	*Roleystone*
10445 000	VK4RIK	*Cairns*

1 A message from Hatsuo Yoshida JA1VOK, confirms the KH6EQI beacon is off the air. Also, Joe KG6DX, at Guam, runs a beacon each day from 2100 to 1400 UTC with 40 watts output and a three element Yagi at 18 feet. His grid location is QK23KL. Joe changes his beam direction as follows: 2100 to 0100 North East (USA); 0100 to 0430 South (VK etc); 0430 to 1400 North West (JA etc). His transmission is . . . VVV DE KG6DX GUAM QK23KL. He also transmits on 50.110 which presumably is his own station and calls CQ CQ DE KG6DX.

2 A letter from Stephen Mills VK2BQY, firstly confirms the operation of the VK2RHV Newcastle beacon; he also says that a contact with his friend, Paul P29PL, brought news that the P29BPL beacon was restored to operation some months ago after a year off air and has been relocated from the island off-shore to a hill in the Port Moresby area. It runs 30 watts to a dipole.

3 Mark VK0AQ, reports the Mawson beacon has been in almost continuous operation during the past year and has slowly crept higher in frequency and is now around 52.432 MHz. I have left it shown as 52.418 because Mark intended trying to get it down. He had hoped the change in ambient temperature to the Antarctic summer would help to lower its frequency, but this has not been the case.

4 Steve VK3OT, told me personally a few days ago that the VK3RMV beacon on 52.435 MHz is back on the air and I can confirm this as it is audible here at Meningie.

5 VK4JPE, Secretary of the Central Queensland Branch of the WIA writes to say VK4RAR is operating from Mount Archer in Rockhampton and is on 432 540 MHz in lieu of 432.545 until a new crystal is obtained. The site is shared with a data repeater on 144.900 MHz.

While on the subject of beacons, Phill FK1TS tells me there is a Japanese beacon on 50.020 which signs JE6ZIS in CW. It is often quite strong in Noumea and if so Phill says he is able to work over most of JA. He said he had only once heard JA2IGY during an extremely good opening. He also copies the ZL1UHF beacon on 51.020 with FSK.

NOUMEA WRITES

Phill FK1TS, sends a copy of his log from 26/10 to 12/11 which lists quite a few good openings to Japan with JA1 to 7 being listed. Most of the contacts have been around 50.100 MHz with signals from S3 to S9. Some stations can be found around 50.110 and 50.120 MHz.

He also reports having worked nearly all JA call areas using three watts to a wire aerial! Mention is also made of a forthcoming Cook Islands operation during January and February, so it may pay the six metre gang to keep their ears open for this one.

The local amateur radio club in Noumea was been allocated a special prefix for the Pacific Games — TO8KPG. There were to be 26 stations using this prefix between TO8KPA and TO8KPZ, during December, with the possibility of a few on six metres. (I wonder if any VK stations actually had contact with these stations?. . .VK5LP).

FK1TK is very active on six metres with an IC551 and a delta loop antenna. With the early arrival of AR in Noumea for November, the Noumea boys were alerted to the changes to the Ross Hull Contest rules. Thanks for the news, Phill.

PORT MORESBY

Further information in the letter re P29BPL beacon, from Stephen Mills VK2BQY, was that P29PL said they had been having some two metre and 70 cm openings down the Australian coast as far south as Bowen/Mackay. Also, Eric P29ZEF, worked a 9M6 at Sabah on two metres recently. He also confirms the reactivation of the H44HIR beacon at Honiara.

FROM JAPAN

JA1VOK says the afternoon-type TEP to northern VK has been good, but the evening TEP poor. YB1CS was copied in JA2 on 3/11/87 at 1130 so there appears to be some activity from Indonesia.

Hatsuo says he has a schedule with Geoff VK3AMK or Mike VK3BDL at 0700 UTC every Sunday on 14.285 MHz (pi9026 QRM) for exchange of VHF information between VK and JA. Interested VHF operators, with news, may break in. Hat says the 10 metre frequency of 28.885 MHz is still not reliable enough for it to be used on a regular basis so they are continuing on the 20 metre net for the time being. Hat also makes a plea for any operators sending QSL cards to include their grid locator square on the card as many operators are now chasing these squares.

The VUCC (VHF/UHF Century Club Award) now has sections for 100 grid squares for contacts on 50 and 144 MHz, 50 squares on 432 MHz and 25 squares on 1296 MHz. Only those contacts since January 1, 1983, are creditable for VUCC purposes.

THE SUMMER SPORADIC E SCENE

How you see the 1987 Es season can depend upon where you live! There is plenty of evidence some areas have been enjoying many good contacts on both six and two metres and in most places it seems two metres again has proved a good year for the third time in succession. However, it does seem the main period for consistent contacts on six metres started later than usual with not a lot of activity prior to December. It appears the Perth stations have been having a lean time again this year yet Dave VK6AOM, at Esperance, has had plenty of contacts but he is quite a bit closer to the eastern States. Alice Springs seems to be having its usual share of good contacts, as does Adelaide. The other States all appear to be about normal, although there are reports of considerable activity from New Zealand, indeed, New Zealand into VK5 has been most consistent this year.

In Alice Springs, Peter VK8ZLX, reported the first good Es opening occurred on 3/12 although there had been some limited contacts to VK3 and VK5 towards the end of November. On 3/12, Peter was working VK6KXW on six metres and reported hearing the Perth FM stations and observing Perth Channel 2 television. They tried two metres, 144.100, but there seemed to be some confusion on procedure with the result both stations heard one another but did not complete a two way contact! This was at 1015 UTC. VK8ZLX also heard VK4FXX on two metres. Since then the band has been open on six almost every day in Alice Springs, 4/12 VK3 and VK2DDC, 6/12 VK8ZWM in Darwin, 9/12 VK6ZPG and VK8KXW, 10/12 VK3, VK5MC and VK5RO, 11/12 VK3, VK2KAW, 12/12 VK2, VK1, VK8ZWM, 13/12 VK6ZBG, VK6GL and VK6YU, 15/12 ZL1NHX, ZL3TIC, ZL3ADT amongst a lot of others from ZL, then VK6YA, followed by VK6UF on Koolan Island off the NW coast of WA. On 16/12 VK3, ZL2 and ZL4, VK3NM. At 1105 the band opened on two metres to VK3NM, VK3DUT, VK3AUU, VK3UM, VK3AZG. On 17/12 all over the country on six metres, then 0733 to VK2DDC on two metres, same station on two again at 0808, 0816, then, because there was no one else, they had many contacts. Also heard VK1RK. On six, plenty of ZLs, VK2, VK5, VK6AOM, and VK2YVG, on RTTY. 18/12 at 0227 opened to VK3 on two metres with many stations including VK3ZBJ, VK3AZY, VK3XEX and VK3LK twice. The Mount Gambier beacon was heard for 40 minutes but no VK5 signals. Peter phoned VK5LP but there was no sign of two metres being open at the time in this part of VK5. To round off the day, it was VK2YVG on RTTY.

In the south-east, at South End, Roy VK5AXV

said six metres started in early December. On 16/12 the band was full of ZLs and on 17/12 he observed VK3AUU frantically calling a VK1 on two metres which would have given David WAS on two metres in 24 hours, but he was unable to make the contact. Several stations reported to me that they had worked seven of the eight call areas in 24 hours, so widespread was the two metre coverage.

Roy also said he had worked into Perth on six metres which was his first time for two years, so scarce have contacts been to that area. But he had worked Dave VK6AOM, on 52, 144 and 432 MHz on 18/12 during the morning. From 0800 to 0830, FK1, in Noumea, was heard calling CQ at S7 and worked FK1TK and FK1TS. Also, VK8ZLX for the first contact this year. Roy said there was a new station in Esperance, being Roy VK6JXX who is retired and presently living in the caravan park, and able to operate on six and two metres.

At this stage I had already made three phone calls for information, to Wally VK6KZ, who spoke of the rather dismal conditions over there, and Dave VK6AOM, who saw them much better. The third call went to Les VK3ZBJ, who reported there was certainly plenty of activity on the various bands, but was lamenting the fact that he could find no one to work on the bands above 1296 MHz and up to 10 GHz! Wally VK6KZ, also felt out on a limb in regard to these bands.

The call to VK6AOM, at Esperance, brought the news that he had worked 12 stations in VK3 and VK4 on six metres on 30/11, then on 4/12 it was VK4 again with VK4ZJB being the strongest, also VK1, 2 and 5. On 11/12 he worked VK5ZMK, VK5RO and VK5ZTS on two metres around 0920. On 13/12, two metres again to VK5NC, VK5EE, VK5AXV, VK5DJ, VK3AUU, VK3YTB and VK3LK, then on 70 cm VK5NC, VK5ANC and VK3YTB. 16/12 was a good day there as in most parts of the country with VK1, 2, 3, 4, 5, then ZL2, 3 and 4 in the late afternoon. At the same time VK7 was very strong — all were on six metres. During the evening conditions still remained good so he worked VK5ZMK, VK5AKK, VK5AN and VK5NY on two metres plus VK5AKK and VK5NY on 432 MHz. Short skip conditions allowed Dave to work six stations in Perth which was unusual for him! During the evening he was able to have further contacts to VK5NY and VK5ACY on both 144 and 432 MHz.

Dave found 18/12 to be a good day starting at 2127 (actually 17/12 UTC day) with VK8ZLX at S9+ then around 0400 a string of VK3s plus VK5BC and VK5AXV. This was repeated about four hours later with nine VK3s and VK5AYD. The day before there had been a good tropo opening on two metres to VK5ZMK, VK5AKK, VK5OH, VK5NY and, on 70 cm, VK5AKK, VK5ACY and VK5NY. Roy VK6JXX, the new station from Esperance worked his first VK5 on two metres.

On 20/12, Dave had quite a ball working stations in VK2, 3 and 5. He also reports being capable of now working on four bands to 1296 MHz although he found out that masthead preamplifiers do not like being fed with RF from the transmitter!

It is interesting to talk to Col VK5RO, (the next phone call) as he reports some six metre activity every day since December 1. Some of his better periods included many ZLs on 2/12; VK2, 4, 6 and 8, plus ZL1, 2 and 3 on 4/12' ZL1, 2 and 3 plus VK3 anc 4 on 5/12; the next three days most States on six metres leading up to 9/12 with ZL1, 2 and 3, VK3, 4, 5 and 6, FK1TK at 0408, more ZLs including ZL4, all the rest of the VK States making it all VK States and all four ZL areas. (Col commented that, on many days, the previous situation existed, all States and all ZL with FK8 or FK1 thrown in for good measure.

Col reported 15/12 as being very good. Working ZLs he found them so strong he went over to two metres and heard ZLs calling there but was unable to get through interstate QRM. Then on six to VK8ZMA with the beam on ZL, then swung the beam to VK8 and promptly worked VK3! During the evening around 1110, while working Wally VK6WG, he observed a somewhat rare phenomenon of back scatter on two metres. On 16/12, while working VK6WG on two metres, he launched into working VK4s on two metres with the beam in the west! On 17/12, VK2s worked on two metres; on 18/12 six metres was wide open all over Australia. Worked VK4BKP on two metres at 0110 and, as no one was answering his calls, worked the VK4 several more times.

Col and several others in the course of conversation remarked on the very good Es which existed during the winter maximum period, particularly early July.

The next operator is Trevor VK5NC, at Mount Gambier, who has been on some sick leave and working quite a bit of DX. Being where he is, Trevor's log has many contacts into VK3 on 144 and 432 MHz; eg 1/10 VK2YEZ at Griffiths on 144 at 1248 and at 2108 to VK6WG on 432; on 24/10 to VK7JG on 144 at 0717. The first 52 MHz is on 4/12 to VK4KJL at 0705, VK4ZMI 0709, VK8ZMA at 0734 and VK2YDC at 0922. On 9/12 the ZLs were good with ZL2s being best, also VK3OT and VK5AXV. On 10/12 it was to VK4ZJB at 0026 and plenty of others throughout the day, VK2GMC at 0410. At 0525 it was to our old friend Lance VK4ZAZ, followed by a two metre contact to VK4ZAZ at 0551, others on two being VK4KJL, VK4TN, VK4AGQ and VK4BE up to 0604, VK3ZQB at 0609, VK5ZXV at 0612, back to VK4WD at 0626, VK3LK at 0636, after which six metres was used to VK2YME and VK2DDU, almost making it to VK2DVZ on 144.

13/12 at 0852 had VK6AOM at Esperance on 144, also VK6JXX, VK6AOM on 432 as well as VK3YTV, VK3ZBJ and VK3ZAT. Then VK6KJ on 144 and 432, VK3HV on 144 at 2058, VK3XEX 2106, VK5NY 2234, VK3ZBJ 2246, VK3TAY 2248, VK3ZBJ and VK3NW on 432 around 2325 then VK3KIR on 144 and 432 at 2355. So all in all, Trevor had been making good use of a bit of free time.

MENINGIE

The VK5LP establishment at Meningie finally got the antennas erected on Sunday, December 13, with the help of David VK5KK, who did all the above ground work, and the help of friendly neighbours who assisted with erecting the winch-up tower. There were no hitches and, at the end of the day, we had the big six element Hy-gain beam on a 25 foot boom at 70 feet (this antenna is nearly 25 years old and still in very good condition. It has as much gain or more than one of the eight element KLMs of which I formerly had a stacked pair). Also, one of my original 13 elements on two metres was at 80 feet, the 16 element KLM, with gold plated driven elements for 432 at 86 feet and above that, reaching to the final tip height of 95 feet, the stacked Ringo for the FM channels. The six and two metre antennas are fed with new 9913 coax plus a masthead preamplifier on 144; 432 with preamplifier used 5/8 inch Heliax and the poor old Ringo suffices with 75 ohm brand new ET13M which I had on hand. This is much better than the RG8 I could have used or even the 8214 which had fed the two metre system before. After adjustment, the two metre FM rig delivers its rated 25 watts to the antenna so it does not really mind the different impedance!

So the whole antenna system looks over all local obstacles and gives me a clear path in whatever direction I want to look. Although, due to some other commitments, I have been unable to get on the air as much as I would like, I have found the path to the south-east and into Victoria to be excellent on 144 and 432, and to find I can work the Albany boys on 144 and 432 without any trouble is a big bonus. It was good to work Wally VK6WG, on both bands on 16/12 around 2310 with signals to 5x9 and even finding 432 on that occasion was better than 144! With the enhanced conditions at that time it was no trouble to copy the Launceston Channel 8 repeater on the Ringo and was able to hear my old friend, Col VK7LZ, once again. I was unable to call him because when I did our VK5 Channel 8 repeater took over! It is also good to be able to work back into Adelaide at 5x9 using one watt! Provision has been left to mount a 1296 MHz antenna system between the six and two metre beams where they can be reached without having to lower the whole assembly and the 7/8 inch Heliax I have to feed the system can be handled without too much trouble.

Amongst the few things I have done since coming back on the air after four and a half months of silence was to work Lionel VK3NM, for the first time on two metres. We have only ever been able to do it once on six metres and never on two. I also gave John VK4PU his first VK5 on two metres on 16/12 at 2316 and finally caught up with John VK4ZJB on two metres the same day at 2331. In all, about nine VK4s were worked that morning. It is good to have the VK3s within range now and the VK5RSE beacon is again always audible.

Finally, I may not have quite the freedom I used to have on six metres as I now live in a town situation and with the television stations level being lower in Meningie than at Forreston, it may be necessary to be observant about TVI. No complaints so far but then I have not been using the linear amplifier (the pair of 811As). Running 10 watts from the transceiver I see nothing on my own television set, but a few faint lines from the fourth harmonic on Channel 10; at the moment I am not unduly concerned as I am sure there will be no problems if handled correctly.

Some information picked off air was that on 16/12 the ZLs were hearing the VK4RTT beacon on two metres at 1000 UTC. This was about the same time that ZL2TPY was working VK1s RK, VP and BG on two metres.

David VK3AUU reported contacting W5UN again via the moon on two metres on Sunday morning around 3 am local time! I think he said that was the fifth time he has done that so his antenna system and other equipment is certainly working.

At 2316 on UTC morning 16/12 I worked VK4VC and VK4PU within the minute on two metres SSB. That opening lasted exactly 40 seconds so, through not wasting time, two contacts were nabbed. Something similar happened at 0013 the same morning when Don VK4GP, came through for a few seconds but it wasn't until 0024 when he broke through again that I was able to make the contact. Five second openings take handling!

One good thing I noted during the fine opening to VK4 on two metres was how the VK4s spread themselves out instead of all congregating on 144.100 MHz. There were about a dozen of them and they were found spread from 144.085 to 144.125 MHz. I am sure all of us could learn something from that object lesson.

Next morning it should be possible to have an even better idea of the extent of the various two metre openings, but everything at the moment is pointing towards a very good year again.

THE ANTARCTIC EXPEDITION

Don Richards has sent some further information which includes details of the six metre equipment taken by the expedition. Kenwood has loaned the TS680, Roger Harrison VK2ZTB, of *Australian Electronics Monthly,* has loaned a six metre linear amplifier, and Vince VK2VC, has loaned a Yagi antenna. Don has a six metre vertical which he can use during the passage down and the Yagi will be used whilst standing by out to sea whilst the climb is being made. If it is possible to set up a shore station the Yagi will be used.

Their operating plans are daily if possible on 14.105 MHz at 0900 UTC, 52.050 phone, 52.010 slow CW daily from mid-January to mid-February and onwards to mid-March, 1000 to 2000 UTC. Call signs are VK2BXM/MM and VK0AT. Les VK2LW will be the contact at the Sydney end for the HF contacts.

Don's contact in Sydney will be Miss Robin Miller at 1/13 Cross Street, Waverley, NSW. 2024 and phone (01) 387 6182.

FROM JAPAN

Further to my mention earlier of the information

from Hat JA1VOK, I have received a few brief pages from the independent DX magazine printed in Japan. From my very limited knowledge of Japanese and some translations by Hat, there are a few points you may find interesting. In the October 1987 issue is a greeting from the start of the VHF column, together with a list of the top 100 stations for countries worked on 50 MHz. Heading the list is JA4MBM with 79 confirmed and 81 worked. Next come VE1YX with 77/79, W5VY 72/75, KH6IAA 72/74, K8KWZ 71/73, K5FF 71/72. The above are those in excess of 70 countries confirmed. The lowest listing is WD4FAB with 44/45 which is still a very good score and just above our own Graham Baker who ran up 42 countries while living in Darwin. I see my friend Bill W3XO of *QST* is listed with 59/69 so he is quite well up the table, in fact, is in the 14th position.

Hat lists a new beacon Europe being CT0WW on 50.030 MHz and 40 watts output, also the South African beacon I am already reporting in my list. News has filtered through to me via Wally VK6KZ that this beacon is not able to transmit looking towards Australia due to TVI problems! That seems such a pity when we are starting to rise out of the low part of the cycle.

The November issue carries two graphic pictures on the cover showing what appears to be a DXpedition by J1RL and JF1IST/J1 standing on a rock in the ocean about the size of a room in a house at low tide and perhaps five feet out of the water. The other picture is at high tide with the area shrunk to about the size of an average bathroom and maybe two feet above the water, but with waves breaking over the rock! There is no one on the rock at high tide as you may gather. If that is 7J/Okinotorishima, then they can have it for mine!

It is mentioned that, on 21/6, N6CW heard JE2KPC at 0540 UTC, the distance being about 9000 km on 50.110 MHz. That is a very respectable distance if it was multi-hop Es, or was it F2? JE2KPC uses a 12 element Yagi on a boom 15 metres or 49.2 feet long!.

It is also interesting to note that from 7/6/87 to 23/7/87 the 50 MHz band opened between North America and Europe on no less than 17 days and G3COJ lists a total of 47 contacts during that period. Most were to eastern areas of the US into W1, 2, 3, 4, VE1, 2, 3 and 0.

The December issue of the magazine (called *59*) shows from 5/10 to 7/11 that, for the greater part of October the JAs were only hearing some Australian beacons, VK8VF, VK6RTT then they worked VK4 and VK6 on 18/10, 28/10, 29/10, but with contacts to FK1TS and KG6DX at odd times plus VK3ZTK on 28/10. In November they worked to VK3, 4, 8, KG6, FK1TK plus YB1CS. There is also a copy of my beacon list from AR!

It also appears that JG3MRT operated from FK on 26/10/87 and worked 204 JAs and all JA call areas. Equipment was an FT680.

KC6CS was heard testing on 24 to 30/11 and transmitting as a beacon on 50.105 MHz.

The December issue includes an updated 50 MHz Standings List and this shows the top station is now VE1YX with 81 countries confirmed and 82 contacted. JA4MBM is now in second place with 79/81. Next K8WKZ 73/76, K5FF 73/76, W5VY 71/74, and down to Bill W3XO, who improved by one on 60/71.

WA6BYA's new six metre antenna is to be an 11 element Yagi on a 13.6 metre boom, two of them to be stacked 7.5 metres apart on a tower 40 metres high! Some antennas and some tower!

The *59* magazine also mentions the possibility of 28.385 MHz as being the International Net Frequency. I cannot decipher the reasons behind this except that Bill W3XO, of *QST* is mentioned, so he may say something in his column before long.

My thanks to Hat JA1VOK, for sending those information sheets and for the translations of some of the news.

OUT AND ABOUT

Des Clift VK5ZO, told me on the phone that, on 7/11, VK5ZTD and VK5ZDV had a three centimetre (10 GHz) contact between Mount Lofty and The Hummocks. They used a Philips radar type burglar alarm with the double cavity at the focal point of the dishes — the reflection was sufficient to provide the crystal current needed. They used an IF of 100 MHz. Des suggested they would be better to use the recognised 30 MHz IF. Good work boys!

A short letter has found its way to me via the WIA Federal Office from Eric Parvin G2ADR, who, amongst other things, said that on 22/10/87 at 1537 UTC and again later "had the pleasure of making an all time record by contacting A22KZ of Maun, Botswana, on six metres to six metres, and also six metres to 10 metres crossband. Power used was nine watts to a dipole antenna at 28 feet." I don't know the distance but it is a long way and could be as far as anyone has worked on six metres in that direction. Eric is obviously an elderly gentleman with plenty of academic and electronic qualifications so it is good to see someone like that still able to take an interest in the six metre band.

A letter arrived today from Vince VK2VC to that he, VK2KJ and VK2BA had all worked Neville T20AR, at Tuvalu on 15/12 at 1104 UTC. Vince's report was 5x5 sent and 5x2 received. So far that is the only report I have received of Nev working anyone. They were lucky I would think with such low signal reports.

Vince says so far this year he has worked ZL1, 2, 3, 4, FK8 and TO8HI commemorative call sign, VK9NP Norfolk Island and T20AR. He also believes ZK1WL may be active on North Cook Island. Thanks Vince for your letter and standings update.

50 — 54 MHZ DX STANDINGS

DXCC Countries based on information received up to December 22, 1987. Cross-band totals are those not duplicated by six metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz was not authorised.

Column 1: Six metres two-way confirmed
Column 2: Six metres two-way worked
Column 3: Cross-band (6 to 10) confirmed
Column 4: Cross-band (6 to 10) worked
Column 5: Countries heard on 50 MHz
Column 6: Countries heard on 52 MHz

CALL SIGN	1	2	3	4	5	6
VK8GB	42	42			13	
VK2BA	30	30				
VK4ZJB	30	30				4
VK2QF	26	26				
VK2VC	26	27				
VK2DDG	25	26		2	12	3
VK3OT	25	26			10	
VK3AWY	22	22				
VK2KAY	21	23				
VK5LP	21	22			6	3
VK2BNN	20	21				
VK4ALM	20	20				
VK3XQ	19	20			1	1
VK4TL	19	19				
VK7JG	18	20			2	
VK3AMK	17	17				
VK9XT	17	21				
VK3AUI	17	21				
VK4ZAL	17	17				
VK3NM	16	17				
VK4ZSH	15	16				
VK2ZRU	15	16			1	3
VK3ZZX	12	13				
VK9YT	12	14				
VK6OX	10	10	1	1		
VK6RO	9	9	3	3	2	3
VK4KHZ	8	10				
VK6HK	8	13		3	2	
OVERSEAS						
JA2TTO	48	48			6	

The minimum number of countries confirmed for an operator to commence being listed is five, including VK.

The position on the list is determined by the number of confirmed contacts. Where two or more operators have the same total, those first date listed with that total can only be displaced by someone having a greater number of confirmed contacts.

The next list will appear in August 1988, and entries will need to be on my desk no later than June 15, 1988. Claimants are reminded that full details of all contacts are required; viz date of contact, time in UTC, call sign of station worked, country, mode, report sent and received, QSL sent and whether received, split frequency contacts should be indicated. Please add your own call sign, signature and date.

I reserve the right to ask any claimant for QSL cards for perusal to support any verification if considered necessary. Some claimants are sending photocopies of the back and front of the QSL cards received which is quite a good idea.

I hope I have not missed anyone this time. With the big shift to Meningie it is always possible something could be mislaid but I believe the listing is correct.

CLOSURE

It is rather interesting to note that around December 21 to 23, at Meningie at least, there has been almost no activity on six metres which seems rather unusual for the time of the year. Maybe the Es is waiting to reach a new peak between Christmas and the New Year.

Closing with two thoughts for the month: *"The only thing worse than an expert is someone who thinks he is an expert"* and *"If life were just, we would be born old and achieve youth about the time we had saved enough to enjoy it!"*

73 *The Voice by the Lake*

Magazine Review

Roy Hartkopf VK3AOH
34 Toolangi Road, Alphington, Vic. 3087

G — General
C — Constructional
P — Practical without detailed constructional information
T — Theoretical
N — Of particular interest to the Novice
X — Computer program

SILICON CHIP, November 1987. New Australian ELectronics magazine. Evolution of electric railways (G). Electronic sales and repairs (G). House Wiring Dangers (G). 1 GHz Frequency Meter (C).

73 MAGAZINE, October 1987. Doubly Balanced Mixers (P). Gunn and Impatt diode testing (P). Linear IC Amplifiers (G & N).

CQ October 1987. DX CW Contest Results (G). High gain Portable VHF Antenna (C).

BREAK IN, November 1987. The National Link (G). Control by Tones (P).

SHORT WAVE MAGAZINE, October 1987. FAX Special Issue (G). Marconi (G).

QST, October 1987. Surface Mounting Technology (G & N). Amateur Radio and the Blind (G). Microwave Dummy Loads (P).

QST, November 1987. QRP Omni Box (C & N).

REGION 3 NEWS, May 1987. Journal of the IARU Region 3 Association.

RADIO ELECTRONICS, October 1987. Commodore C64 Pulse Generator (C & X). SCR and TRIAC Circuits (P & N).

RADIO ELECTRONICS, November 1987. Surface Mounting Technology (P & N). Bell Telephone Story (G).

DOTC

SBS AVAILABLE VIA SATELLITE IN SE AUSTRALIA

Close to three million Australians in regional areas of South Eastern Australia will have the potential to receive SBS television via the AUSSAT satellite, following the Government's decision to end the encoding of the SBS signal.

The decision, effective from December 2, 1987, will provide immediate access to SBS programs to the 1000 or so owners of small domestic B-MAC satellite receivers in the south-east zone who are outside the areas already served by SBS (see map). These people already receive ABC programs under the Homestead and Community Broadcasting Satellite Service (HACBSS).

The SBS has been using an AUSSAT satellite to distribute programs to its terrestrial transmitters in south-east Australia and Perth.

This distribution signal is not actually designed for reception by small domestic satellite receivers, and when it was commenced in March 1986, it was decided to encode the signal because it was thought that it would not provide a suitable quality for regional reception.

The B-MAC transmission system has, however, performed even better than originally anticipated, paving the way for the signal also to be received by small domestic receivers.

The SBS signal is of a lower power than the ABC signal and while the former may at times be affected by heavy cloud or rain, it should provide an acceptable picture at most times in the south-east. The distribution signal to Perth is a small off-shoot of the main beam, and could only be received by a very large satellite antenna.

The decision should please the many people in regional areas of south-eastern Australia who have made representations to me for the signal to be unencoded.

An added benefit will be that people with domestic B-MAC receivers will now also be able to receive SBS radio programs transmitted by stations 2EA and 3EA. The SBS recently began distributing these radio services by satellite.

The commencement of unencoded transmissions will not affect the existing terrestrial capital city SBS transmissions, which now reach about 10.7 million Australians.

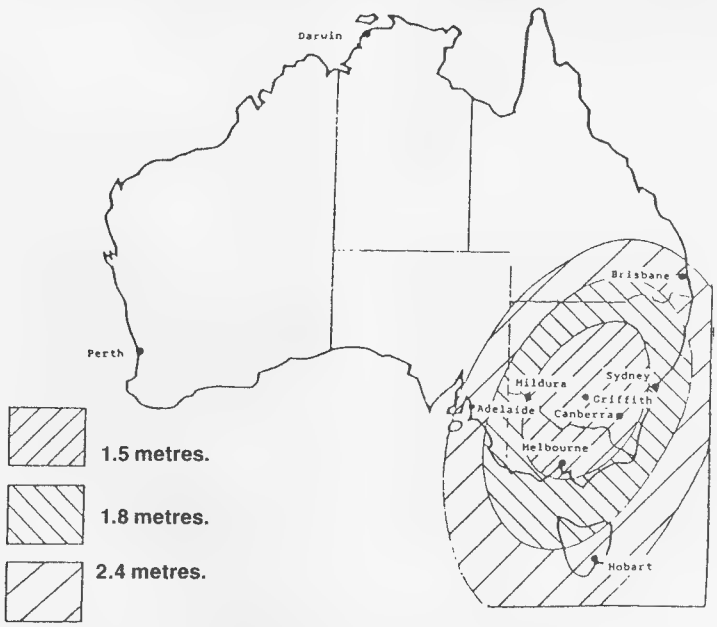
In addition to home satellite reception, it is possible for communities in the south eastern zonal beam to establish a facility to receive and locally re-transmit the SBS signal. This option, under the Self-help Broadcasting Reception Scheme, is often more cost-effective for communities than the purchase of individual satellite receivers. The technical design of these facilities also ensures high quality reception.

Information on the Self-help Broadcasting Reception Scheme, including advice on possible costs in particular locations, is available from the Offices of State Broadcasting Engineers of the Department of Transport and Communications in Sydney or Melbourne.

In announcing the decision to unencode, I am conscious that the licensee for the Remote Commercial Television Service for the south-eastern zone surrended its licence on October 22, 1987. The Government is still considering a number of alternative options, but in the meantime, people with satellite receivers will have the SBS service available in addition to the ABC.

Media Statement by the Minister for Transport and Communications, Senator Gareth Evans, QC, December 2 1987

Coverage Area of SBS Satellite
Transmissions — Domestic B-MAC Receivers. Satellite Receiver Dish Size.



Note that the signals have less power than the Homestead and Community Broadcasting Satellite Service (HACBSS) and that these dish sizes will permit acceptable reception in a clear sky. Reception may be difficult during periods of heavy cloud or rain.

CHANGES TO RADIOCOMMUNICATIONS LICENCE FEES

The Minister for Land Transport and Infrastructure Support, The Honorable Peter Duncan, MP, announced a revised fee scale for 1987/88 radiocommunication licences on September 15 1987.

Mr Duncan stressed that the radio frequency spectrum would only be valuable while it was used in an orderly fashion.

"Licence fees are set to encourage efficient use of the spectrum which benefits all Australians, and users in particular, through the greater availability of this limited national resource," Mr Duncan said.

The main change in licence fees is in the land mobile service. A shortage of suitable radio frequencies in Brisbane means that new applicants for the use of mobile frequencies in this city will either have to share use of a channel, or pay a system fee of $2170 for an exclusive channel. This scheme already applies in Sydney and Melbourne

The other change involves the licence fee for base stations of mobile services in the Sydney area, which will be higher than the fee in other urban areas.

The fees increased about seven percent on December 1, 1987, which is less than the current annual inflation rate. It is estimated that revenue derived from the use of the spectrum in 1987/88 will be $37.413M compared with $33.218M in 1986/87.

The amateur licence is now $28.

Information on the revised fee structure can be obtained from the Radio Frequency Management Offices of the Department of Transport and Communications. These offices are located in the State capital cities as well as in 20 regional centres around Australia.

Abridged from a Media Statement issued by the Department of Transport and Communications

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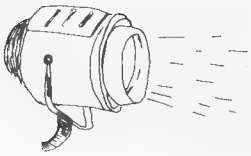


Spotlight on SWLing

Robin Harwood VK7RH
52 Connaught Crescent, West Launceston, Tas. 7250

News has come to hand about the exchange agreement between Radio China International and Radio Japan, to allow Canadian programming to go through the NHK transmitting site in Yamata, Japan. To do this, special legislation had to be passed in the Japanese Diet (parliament) because prior to this it was prohibited to allow relay facilities of another's programming via Japan.

For about 18 months now, Radio Japan has enjoyed the relay facilities of the RCI Sackville site, for their English and Japanese programs to the east coast of North America. The signals have been heard here in Australia with reasonable strength at 1100 UTC on 6.120 MHz in English. Now the RCI programming will go out via the Yamata site from the beginning of April. Programming will be in English/French, Russian and Japanese. The target is Asia and the Pacific. Canadian audience research has shown only four percent of their total audience is in that region, with the surprising results that their primary audience is in Eastern Europe. It should be emphasised that a large proportion of Canadian immigration over the years has come from there.

English from RCI via Yamata will be heard at 1200 to 1230 UTC on 15.290 and 17.810 MHz and from 2200 to 2230 UTC on the single channel of 17.885 MHz. From 2230 to 2300 there will be French programming, whilst 9.650 MHz will be utilised from 2030 to 2100 with Russian, beamed to Asiatic Russia.

Until now, RCI has produced Japanese programming which has been aired over the Japanese commercial shortwave station, Radio Tanpa. This is from 0830 to 0900 UTC, or 1730 to 1800 Japanese Standard Time, on 3.925, 6.055 and 9.595 MHz. This is more or less a commercially sponsored program and will cease on March 30. On April 4, Japanese programming will be coming via the Yamata site on the single channel of 6.150 MHz from 1300 to 1330 UTC. Incidentally, the programs are not produced at the RCI studios in Montreal, but rather at Vancouver on Canada's Pacific coast.

The much heralded relay of Radio Australia, via the ABC Radio National did not eventuate last year, probably due to budgetary constraints within the ABC. But it was announced on *Talkback* on November 21, that it will commence on Australia Day, January 26, between midnight and dawn local time. This means that MW DXers will find it even more difficult to get overseas stations, yet not impossible. MW loop antennas will help a little. Incidentally, I believe that regional stations will have a choice of either Radio National or the local Midnight to Dawn show on Radio 2BL and metropolitan stations. I believe that 3AB, in Albury, has been relaying RA for about 12 months between midnight to dawn.

It has also been revealed that the site for the third transmitter of the *Christian Science Monitor* to service Central and South America, is near Savannah, South Carolina. The land has been purchased as well as the sender and their target to commence was last month. At deadline time, I have no further indications either, when KYOI, in Saipan, is to switch to the World Service programs.

They are still using a music format. KYOI's signals have gone down at this location, but I have seen reports that they plan to install a second sender which will service the Pacific region.

Two American stations have commenced using the 22 metre broadcasting allocation. They are WYFR, Family Radio, and WRNO, in New Orleans. *Family Radio* has studios on the US west coast yet their transmitters are at Okeechobee, Florida. I have heard WYFR on 13.695 MHz, at 2015 UTC, in English to Europe. WRNO has been heard on 13.760 MHz at 2300 UTC with commercial programming. More international broadcasters are utilising this band, although it is not scheduled to come into full operation until 1989. The Soviets have been using this band ever since it was allocated at WARC and other broadcasters are slowly following suit.

Veteran religious broadcaster, Radio HCJB, in Quito, Ecuador, is hoping to upgrade their transmitters over the next few years. They plan to construct an additional 500 kW sender themselves at Elkart, Indiana, as well as four senders over the next five years. You may have noticed recently that they have been experiencing transmitter trouble, so there is a need to upgrade facilities. HCJB also has an Australian studio in Melbourne, which has been producing programming both for local outlets and for HCJB.

The International Committee of the Red Cross (ICRC) has been operating a broadcasting service for over 40 years. This service is activated monthly with test transmissions. It has its own recording studios in Geneva, Switzerland and broadcasting facilities are given free of charge by the Swiss PTT and Swiss Radio International (SRI). Programming is in English, French, German, Spanish, Portuguese and Arabic and consists of Red Cross action around the world. The RCBS welcomes reports of their broadcasts (IRC appreciated), which will be confirmed by QSL cards. Incidentally, the ITU has allocated a frequency exclusively for the RCBS and it is 7.210 MHz, although other broadcasters utilise the channel.

The next scheduled broadcast to Australia and the Pacific will be on Monday, February 1, and Monday, February 29, from 0740 to 0757 and repeated on Thursdays at the same time on the same channels of 9.560, 9.885, 17.830 or 21.695 MHz. Unfortunately, 9.560 MHz suffers from Radio Finland being on the same channel in English at equal strength, but 9.885 MHz is clear. I have not tried the other channels. The release to North America is also often heard in eastern Australia at 0310 to 0327 on 12.035 MHz, and it is on Tuesday, February 2, and Friday, February 5. Reports should be sent to Red Cross Broadcasting Service, International Committee of the Red Cross, 17 Avenue De La Paix, Geneva, Switzerland, CH-1202.

Well, that is all for this month, until next time, the best of good listening and 73 — Robin VK7RH.

MORSEWORD 12

Compiled by Audrey Ryan
30 Starling Street, Montmorency, Vic. 3094

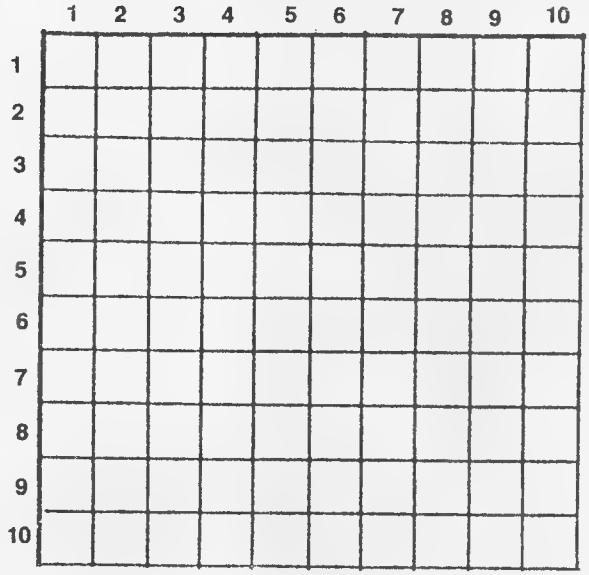
ACROSS

1 Foe
2 Brought lawsuit
3 Squander
4 Form in drops
5 Departed
6 Hair on neck of lions
7 A little margarine?
8 Pictures
9 Not that
10 Mountain in Jerusalem

DOWN

1 Holiday (abbrev)
2 Fish
3 Experience
4 Bonnets
5 Aeroplanes (colloq)
6 Gilding
7 Protruding tooth
8 Be ready for
9 Garment
10 Fatigued

Solution page 60. . .



CHRISTMAS EVE — a sad farewell

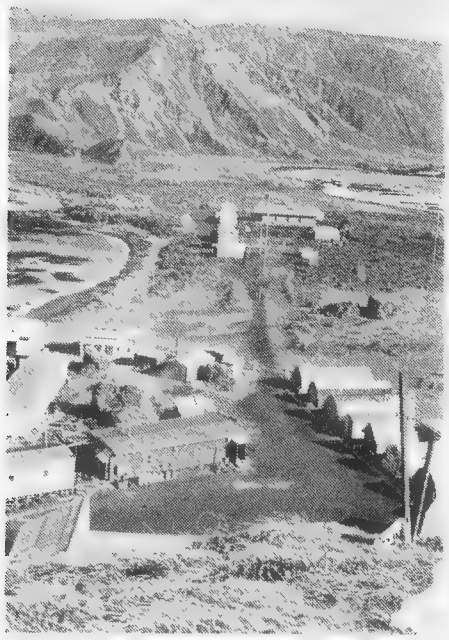
The *Nella Dan's* bow disappeared below the Southern Ocean off the coast of Macquarie Island on Christmas Eve after 26 years of sailing in the area for many Australian Antarctic expeditions.

This Danish vessel had created a record of service which probably will never be exceeded by any other vessel. It is sad, but fitting, that she will lay at rest in the area she traversed so many times, to become a haven for marine life on the floor of the ocean that she had carried scientific personnel who were intent on establishing more information on and facts of the Antarctic area.

The *Nella Dan,* carried numerous amateurs and their equipment to the cold inhospitable areas of the Antarctic for over a quarter of a century. These amateurs gave amateurs worldwide a new country, be it Heard or Macquarie Islands, or just the mainland of Antarctica.

The *Nella Dan* left Hobart on November 27, reaching Macquarie Island, 830 nautical miles to the south, five days later. On December 3, conditions though fine at first, deteriorated and winds reached gale force, with high gusting squalls and heavy seas when it is believed she dragged anchor and was washed onto rocks 50 metres from shore in Buckles Bay.

Her hull, was badly holed during this unfortunate incident, nevertheless all the personnel were safely removed as was some of the equipment including the Meteorological Bureau's valuable satellite equipment and supplies including a considerable volume of fuel oil, which could have caused considerable havoc to the ecology of the area. The safety of the personnel was uppermost in the authorities mind as a successful transfer was made to Macquarie Island, dramatically escalating the islands comfortable population accommodation for 30 to an all time high of 102, for a number of days, until the diverted *Icebird,* was able to relieve the situation.



The station at Macquarie Island. The fringe of Buckles Bay, where the 'Nella' went aground, is at the left of the picture.

Photograph courtesy of the Commonwealth Bureau of Meteorology

The *Nella Dan* in more peaceful days, as depicted on the March 1987 edition cover of *Amateur Radio.*

Photograph courtesy Bert Trupp VK5BVN

The vessel's owners made prompt arrangements for a viability study of a salvage operation to be made, which after considerable appraisal of the age, position and damage to the vessel, it was decided to tow her to an area of ocean, with a sea bed depth of about 5000 metres and open the sea cocks or blast a larger hole in the hull, as a last resort, to send the vessel to her resting place.

The evening before Christmas Eve, whilst a salvage crew of about 20 were removing equipment, souvenirs and mementos from the wooden paneled vessel, the vessel suddenly listed. All aboard were ordered into Army-type landing craft which were along side and the 'Nella' was towed further out to sea, where it was thought the vessel would sink overnight.

It did not sink, but caught fire next morning, apparently from the overheating of the engine of an air compressor which was used to control the balance of the vessel. Within half an hour, the ship was fully ablaze and the oil rig tender the *Lady Lorraine,* continually sprayed water from its high pressure hoses at the rate of 20 thousand litres per minute onto the stricken vessel from every possible angle. It was a hopeless task and the *Nella Dan* disappeared stern first below the waves at 0642 UTC, Christmas Eve, 1987.

On Macquarie Island, Antarctic staff paid their respects to a fine lady of the sea and it has been reported that an Antarctic spokesman in Tasmania said 'Some people think that it is fitting for the *Nella Dan* to complete its service this way. In a traditional Viking funeral, the warrior is pushed out to sea in a burning ship. 'Nella' is a Norse vessel and had its own Viking funeral. Maybe it is much better that it went in a blaze of glory in southern waters rather than end up in a scrapyard, somewhere'.

I believe that all of the personnel that have travelled to and from the Antarctic bases, will have the same sentiments as will the amateurs from all over the world that have had QSL cards and logs, generally for a new country, transported by this grand old lady of the sea.

The Antarctic Scientific programme has suffered very little setback, as new itineries were hastily prepared and a Canadian vessel the *Lady Franklin* was chartered. Both the *Lady Franklin* and the *Icebird* will be working overtime delivering supplies and transporting new and returning personnel from the many bases, before the Antarctic winter really sets in. Dave VK0HI, will leave lonely Heard Island at the end of this month, hopefully with his log book stowed carefully in a waterproof covering and containing many contacts for the worthy first timers, including some on six metres (if the band opened), who have managed to be recorded in the log.

—Contributed by Ken McLachlan VK3AH

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Contests

Frank Beech VK7BC
FEDERAL CONTEST MANAGER
37 Nobelius Drive, Legana, Tas. 7251

CONTEST CALENDAR

FEBRUARY 1988

13 — 14 Netherlands "PACC" Contest
13 — 15 YLRL YL-OM Phone Contest
20 — 21 ARRL DX CW Contest
27 — 28 REF French DX Phone Contest
27 — 28 UBA Belgian WW DX Contest SSB (Rules this issue)
27 — 28 YLRL YL-OM CW Contest

MARCH 1988

5 — 6 ARRL DX Phone Contest
12 — 13 QCWA Phone QSO Party
12 — 13 RSGB Commonwealth CW Contest (Rules December AR)
19 — 20 WIA John Moyle Memorial National Field Day Contest (Rules this issue)
19 — 20 NZART National Field Day
19 — 20 ISSB Phone QSO Party
19 — 20 BARTG Spring RTTY Contest (Rules this issue)
26 — 27 CQ magazine WW WPX SSB Contest

JOHN MOYLE MEMORIAL NATIONAL FIELD DAY CONTEST 1988

CONTEST PERIOD: From 0100 UTC, March 19 to 0700 UTC, March 20, 1988.

OBJECT: To encourage portable operation on the amateur bands by Australian amateurs. This form of activity is intended to help amateurs become familiar with portable operations and thus assist in training them for emergency situations. Emphasis is placed on working between portable stations.

CALL AREA DEFINITION:

a) Within ones own call area. VK7 to VK7 etc.
b) Outside ones own call area. VK7 to VK9; VK7 to ZL etc.

RULES:

1. **DIVISIONS:** There will be TWO DIVISIONS — a) 24-hours and b) 6-hours. In each division the operating period must be continuous within the period allocated for the contest.

2. **SECTIONS:** In each division there will be separate sections as follows:

a) Portable Field Station, transmitting phone, single operator
b) Portable Field Station, transmitting CW, single operator
c) Portable Field Station, transmitting open, single operator
d) Portable Field Station, transmitting phone, multi-operator
e) Portable Field Station, transmitting CW, multi-operator
f) Portable Field Station, transmitting open, multi-operator
g) Portable Field Station, transmitting VHF
h) Home Transmitting Station, emergency powered
i) Home Transmitting Station, mains powered
j) Receiving Stations

3. **STATION DEFINITION:** A **Portable Field Station** is one which operates from a power supply which is independent of any permanent installation. The power source must be fully portable, ie solar panels, batteries, wind or motor generators, etc. A station located in an automobile and completely self-contained, apart from antennas, is classed as being portable, whether in motion or not.

A **Single Operator Station** is one where the work involved in setting up the station is carried out by one operator and where this operator is the one who makes all contacts from the station. This does not, however, preclude the operator from having normal support such as a log keeper, or for the provision of food etc. This definition debars such stations as entering a club station using a single operator with massive support, in competition with stations which are set up and operated by an individual operator in the normal sense of the word.

It is considered that the terminology of **Multi-operator Station** is self explanatory.

4. **INSTALLATION:** No radio apparatus, including mast, antennas, feeders, etc, may be erected on the site more than 24-hours before the contestant/s begin/s operating.

5. **BANDS:** All amateur bands may be used **with the exception** of the 10, 18 and 24 MHz bands.

6. **CONTACTS:** Cross band contacts are not permitted. Cross mode contacts are permissible, however they will count only as phone contacts for scoring purposes.

7. **SIZE** The size of any portable station shall be restricted to approximately that of an 800 metre diameter circle.

8. **MULTI-OPERATOR STATIONS:** Such stations will provide a separate log for each band. Only one transmitter may be used on a given band at any one time, be it operating in a phone or CW mode. Only **one** call sign may be used from a multi-operator station.

9. **NUMBER EXCHANGE:** The exchange between stations will consist of a number/letter combination comprising the RS/T report as applicable, followed by a serial number commencing with 001 and increasing by one for every contact. Should the number 999 be reached, the series must then be re-commenced at 001. **Following the serial number,** a letter must be added indicating the Section (a) through (i) in which the station is competing. eg Number sent by a multi-operator station transmitting phone for the first contact would be 59001D. Both serial numbers sent and received must be recorded in the log.

10. **SCORING:** For Portable Field Stations — Contacts within Australia:

a) Portable/Mobile outside own call area — 20 points
b) Portable/Mobile within entrants call area — 15 points
c) Home Stations/Section H outside entrants call area — 10 points
d) Home Stations/Section H within entrants call area — five points
e) Home Stations/Section I outside entrants call area — two points
f) Home Stations/Section I within entrants call area — one point

— Contacts outside Australia:

g) Contacts with overseas stations, ie other than VK — two points

Scoring, for Home Stations/Emergency Powered — contacts within Australia:

a) Portable/Mobile outside entrants call area — 15 points
b) Portable/Mobile within own call area — 10 points
c) Home Stations/Section H irrespective of call area — five points
d) Home Stations/Section I irrespective of call area — one point

NOTE: Home Stations/Emergency Powered must operate independently of mains power.

Scoring, for Home Stations/Mains Powered — Contacts within Australia:

a) Portable/Mobile outside entrants call area — 10 points
b) Portable/Mobile within entrants call area — five points
c) Home Stations/Section H irrespective of call area — one point

11. **VHF/UHF MULTIPLIERS:** For contacts made on frequencies from the 50 MHz band and upwards, the QSO points score for each contact is multiplied as per the following table:

DISTANCE	MULTIPLIER
Under 50 kilometres	1
50 — 150 kilometres	5
150 — 300 kilometres	10
over 300 kilometres	20

12. **BONUS POINTS:** For any contact made using a natural power source, a bonus score of 10 points may be added. A natural power source is regarded as one where power is derived from such as solar cells, wind, methane gas, etc, as well as from batteries which are completely charged by natural means. All power produced under this category must have been derived independently of commercial mains or the use of petroleum derivatives.

13. **CW CONTACTS:** CW to CW contacts earn double points. These points must be shown as claimed on the log sheet prior to the application of any multiplier or bonus points. *NOTE:* See below regarding CW Trophy under Rule 22.

14. **REPEAT CONTACTS:** Portable Field Stations and Home Stations under Section H may contact other stations within these categories (Section A to H) provided that a period of at least three hours has elapsed since the last contact with the station concerned. Home stations operating under Section I may be contacted provided that a period of at least six hours has elapsed. This applies for each band and mode. *In the case of Portable Field Stations operating in the NZART Field Day Contest,* repeat contacts are allowed. Contacts with any one station permitted twice each hour on each band provided that one contact is on phone and the other is on CW, and provided that some other station is contacted between the two QSOs. *Note:* "each hour" means between the even hours such as 1600-1700; 1700-1800, etc.

15. **RECEIVING STATIONS:** Stations in this section must record the serial number being sent by any of the stations operating in the contest within Sections A to G inclusive. QSO points scoring will be on the same basis as for Home Stations/Section I as per Rule 10 above. VHF/UHF Multipliers and Bonus Points as indicated under Rules 11 and 12 also apply.

16. **REPEATERS:** Operation through any active earth repeater is not allowed for contact purposes, however, the use of such is allowable for the purpose of making contact arrangements. Contacts made using orbiting satellites or EME as a medium are acceptable.

17. **MODES OF OPERATION:** AM, FM, and SSB all count as PHONE operation. RTTY and CW are both regarded as CW. It would not be expected that more exotic modes, such as SSTV, Packet or Fast Scan television would be used in this contest.

18. **LOG FORMAT:** All logs shall be set out under the following headings and in the order shown:

Date; Time UTC; Call Sign; Band; Mode; RS/T Sent; RS/T Received; QSO Points; Multiplier; Bonus Points; Total Points Claimed.

NOTE: The last three columns need only be shown where applicable. Contacts must be listed in order of Time and Serial Number. Each log page must also carry a progressive Total Points Score Claimed at the bottom of each sheet. Scores Claimed must be calculated by first multiplying the QSO Points Score as taken from Rule 10 by any applicable multiplier from Rule 11 and then adding any Bonus Points as per Rule 12.

19. **SUMMARY SHEET:** A Summary Sheet must be included which indicates the following details:

For each contact for which a multiplier is applicable, the Serial Number of the contact and also details of the respective stations locations which apply to the contact. Such details must include either latitude/longitude references for each station or some satisfactory proof by such as a

map reference or distance calculation as to the distance over which the QSO was conducted.
For Bonus Points to be claimed, suitable evidence must be provided as to the method of Natural Power Generation employed. Such evidence could take the form of a photograph of the generating equipment used or a signed statement by another amateur showing his call sign, declaring that he has inspected the generating equipment referred to.
20. FRONT SHEET: Each log must be accompanied by a Front Cover Sheet which provides the following information:
Name; Address; Call Sign; Division (six or 24 hour); Section (A to J); Number of Contacts; Claimed Score. This sheet must also indicate station location, equipment used, power generating system employed and, in the case of Multi-operator Stations, a list of operators names and call signs, together with their signatures.
This Front Sheet must also carry a declaration signed by a licensed amateur as follows:
DECLARATION — I hereby certify that this station was operated in accordance with the rules and spirit of the contest. Signed..... Date.....
21. MULTIPLE STATION OPERATION: In the case of amateurs who have entered the contest in the six hour Single Operator Section it is allowable for them, upon their return to their Home Station, to make contacts with portable field stations. For this purpose they must submit a separate log which will be regarded as a Check Log only; ie they cannot enter into more than one section of the contest for competitive purposes. Operators who are interested in providing more field day activity are encourages to adopt this practice where possible. It should be noted however, that the practice of Multi-operator Station participants considering themselves to be portable stations and making contacts with the portable field contest station so as to bolster that station's score is deemed to be not in the spirit of the contest, and, as such, contravenes the intent of Rule 20.
22. CERTIFICATES AND TROPHY: Certificates will be awarded to the winner of each section in both the six and 24 hour Divisions of the contest. The six hour certificates cannot be won by the 24 hour entrants. The Contest Manager also reserves the right to award other certificates where the effort made by a particular station is of special worthiness.
The **Highest CW Scorer** outright in the contest, irrespective of the section of the contest entered, will receive a trophy in the form of the **President's Cup** to hold for a period of 12 months. This award is intended as an encouragement to operators to utilise the CW mode whenever possible.
23. DISQUALIFICATION: The general Contest Disqualification Criteria, as published in *Amateur Radio* page 46 August 1987, apply to this and all WIA contests. It is again pointed out that you should read the above rules properly so as to understand them and ensure that your log does comply with the contest rules laid down.
24. LOG SUBMISSION: Logs should be forwarded to the WIA Federal Contest Manager, 37 Nobelius Drive, Legana, Tas. 7277. The front of the envelope should be endorsed **John Moyle Memorial Field Day Contest.** Closing date for entries is April 29, 1988.

UBA CONTEST 1988

The Union of Belgian Amateurs (UBA) invites all amateurs world-wide to participate in the UBA Contest 1988.
NAME AND AIM: To contact as many Belgian and other amateurs as possible in the UBA Contest.
PERIODS: Last full weekend of January and February each year.
CW — January 30, 1300 UTC to January 31, 1300 UTC.
SSB — February 27, 1300 UTC to February 28, 1300 UTC.
CLASSES:
a) Single operator, single band, maximum 18 hours.
b) Single operator, multi-band, maximum 18 hours.
Note: All off-periods for single operators must be at least one hour long and clearly shown in the log.
c) Multi-operator, single transmitter, all bands.
d) QRP, 10 watt, as Class B.
Log entries from SWL stations are appreciated and will be awarded.
BANDS: 10, 15, 20, 40, 80 metre bands.
CONTEST CALL: CW "Test UBA", SSB "CQ UBA".
EXCHANGE: RS/T, plus serial number starting from 001.
NOTE: Belgian stations give their province abbreviation, eg 59001/AN.
SCORING:
QSO with ON, DA1 and DA2 counts 10 points.
QSO with other European Community country stations, DL, I, F, inc TK, LX, PA, EI, G, OZ, SV, CT, EA, counts three points.
QSO with own country counts only once per band for QSO credit.
QSO with any other station counts one point.
MULTIPLIERS: All Belgian provinces, AN, BT, HT, LB, LU, NR, OV, WV, maximum nine per band.
Each of the prefixes ON4, ON5, ON6, ON7, ON8, ON9, DA1, DA2, maximum eight per band.
All other countries from the European community; DL, I, F, LX, PA, EI, G, OZ, SV, CT, EA, TK, counts for F, maximum 11 per band.
FINAL SCORE: Total QSO points times the total number of multiplier points.
LOGS: Showing date, time UTC, station worked, reports exchanged and respective serial number, points and multipliers. Use a different sheet for each band. Each entry must be accompanied by a summary sheet showing all the scoring information, the off-periods, class of entry, mode, name, call sign, full address and a signed declaration.
DECLARATION: "I declare that all contest rules and all the rules and regulations for amateur radio operations in my country have been observed and adhered to. I accept the decisions of the contest committee.
ADDRESS FOR LOGS: UBA HF Contest Committee, Galicia Jan ON6JG, Oude Gendarmeriestraat, 62, B-3100 Heist Op Den Berg. Belgium.
DEADLINE: All entries must be postmarked not later than 30 days after the contest.
AWARDS: The new "UBA Contest Award" will be sent to the highest scoring station in each class in each country. Other participants receive a certificate. A special engraved plaque will be awarded by ON6JG to the first entry in Class B of the SSB contest who proves all 28 multipliers have been worked. It is also possible to achieve the WABP (Worked all Belgian Provinces Award) for contacts with all provinces on two different bands, QSL cards for this award are not mandatory.

WORKED ALL BELGIAN PROVINCES AWARD

Enclose your claim with the contest log, or send your claim check list with 10 IRCs or US$3 to: UBA HF Awards Manager, Van Campenhout Mat ON5KL, Hospicestraat 175, B-9080 Moerbeke-Waas. Belgium.

BARTG SPRING RTTY CONTEST 1988

WHEN: 0200 UTC Saturday, March 19 until 0200 UTC Monday, March 21. The total contest period is 48 hours but not more than 30 hours of operation is permitted. Time spent as listening periods count as operating time. The 18 hours of non-operating time can be taken at any time during the contest period, but off-periods may not be less than three hours at a time. Times on the air must be summarised on the summary sheet.
WHO: There will be separate categories for single operator, multi-operator and shortwave listener stations.
BANDS: 3.5, 7.0, 14.0, 21.0 and 28 MHz amateur bands.
STATIONS: Stations may not be contacted more than once on any one band but additional contacts may be made with the same station if a different band is used.
COUNTRIES: The ARRL DX countries list will be used, and in addition, each W/K, VE/VO, and VK call area will be counted as a separate country. *NOTE:* W/K, VE/VO, and VK count once each only for QCA purposes.
MESSAGES: Messages will consist of:
a) Time UTC. This must consist of a full four figure group and the use of the expression "same" or "same as yours" are not permitted.
b) RST and Message Number. The number must consist of a three figure group and start with 001 for the first contact made.
POINTS: Points can be claimed as follows:
a) All two-way RTTY contacts with other stations within one's own country will score two points.
b) All two-way contacts with other stations outside one's own country will score 10 points.
c) All stations can claim a bonus of 200 points for each country worked, including their own. *NOTE:* That one country may be counted again if worked on a different band but continents are counted once only. *NOTE:* Proof of contact will be required in cases where the station worked does not appear in any other contest log received or the station worked does not submit a check log.
SCORING:
a) Two-way contact points times the total of countries worked.
b) Total country points times 200 times the number of continents worked (maximum six).
c) Add a) and b) together to obtain the final score.
Sample calculation:
Exchange Points (302) X Countries (10) = 3020
Country Points (10) X 200 X Continents (3) = 6000
a) and b) added together to give a score of 9020.
LOG AND SCORE SHEETS: Use a separate sheet for each band and indicate all times on the air.
Logs to contain:
Date, Time UTC, Call Sign of each station worked, RST and message number sent, Time RST and message number received and the points claimed. *NOTE:* Logs received from shortwave listeners must contain call sign of station heard, report sent by that station and call sign of the station being worked. Also date and time that the QSO was logged. Incomplete loggings are not eligible for scoring and will be classified as check logs. The summary sheet should show the full scoring, the times on the air, address for correspondence, and in the case of multi-operator stations, the names and call signs of all the operators involved with the operation of the station during the contest. All logs must be received by May 28, 1988, in order to qualify.
Send logs to: Peter Adams G6LZB, 464 Whippendell Road, Watford, Herts, England, WD1 7PT.
The judges decision will be final and no correspondence can be entered into in respect of incorrect or late arrivals. All logs submitted shall remain the property of the British Amateur Radio Teleprinter Group. Certificates will be awarded to the leading stations in each of the three groups, the top station in each continent and to the top station in each W/K, VE/VO, and VK call area.
ADDITIONAL NOTES: If any contestant manages to contact 25 or more different countries on two way RTTY during the contest, a claim may be made for the Quarter Century Award (QCA) issued by BARTG and for which a charge of $US4 or 18 IRCs is made. Holders of existing QCA awards should indicate and list new countries to be added to their existing records. Make your claim at the same time you send in your log. However, in view of the high volume of work which the contest manager will have to deal with, it will not be possible to prepare and dispatch any new awards or up-date any existing records until the final results of the contest have been evaluated and published.

Pressure of work, and the extra work involved in checking a long list of untidy Remembrance Day Contest logs has caused me to miss the deadline of February AR that I had set for the publication of the results of the 1987 Remembrance Day Contest, however they will be out with the March issue.

The vast majority of the logs that I have dealt with so far have been of a high standard and have not been penalised in any way. Some, however, are most untidy and attract intense scrutiny as can be expected.

Copy of the rules for the Belgian UBA contest arrived too late for publication in the January AR so those who enjoy a good CW contest missed out on the contest details, the full all mode rules as published this month will serve for the 1989 contest.

As you can see from the contest calendar column, the ZL and VK field days now coincide, and with the change to the rules allowing more repeat contacts with the ZL stations to be made, should make this contest more interesting on both sides of the Tasman Sea. Stan ZL2AHC, is the new ZL administrator for the NZART NFD and he, together with Jock White ZL2GX, have given much publicity to the two field days in New Zealand. It is now up to us to make the contest a memorable one. We have all agreed to hold our national field days on the weekend following the RSGB Commonwealth Contest.

VK2 TWO—METRE FM SIMPLEX CONTEST

On Friday, September 25, 1987, the New South Wales Division of the WIA held their first two metre FM simplex contest. The idea of the contest was to show that it is possible to talk city-wide without the need of repeaters. The contest was extended to the country as well, with a division for stations more than 160 kilometres from the Sydney General Post Office (GPO). The contest was from 9 pm to 11 pm on a Friday evening with a frequency limit of 145.000 to 145.600 MHz.

The contest had a built-in multiplier effect, by basing the points on the number of postcode areas worked. The final score is made up of the total number of stations worked multiplied by the number of postcode areas.

The results speak for themselves — 45 logs and over 50 other stations worked. Scores ranged from 2714 down to one (with two stations equal for 44th place). Power and antennas ran the full range from 2.5 watt hand-helds with rubber duckies, up to 120 watts into multi-element beams.

VK2AMV sent some photographs from 1950 showing him working two metres AM portable at Mount Panorama, Bathurst. The portable equipment has certainly got smaller and simpler. The hard-luck story of the contest must go to VK2DRR who went portable at Gan Gan Lookout near Port Stephens — but missed the country zone by only two or three kilometres.

Based on the success of this contest, the NSW Division of the WIA decided to hold more contests based upon the same formula — the next was a two metre SSB contest which was held on Friday, November 27, 1987.

RESULTS OF THE FIRST VK2 SIMPLEX CONTEST

VK2BIT	59 X 46 =	2714 M
VK2DLE	51 X 43 =	2193 M
VK2KAA	52 X 41 =	2132 M
VK2DAY	49 X 38 =	1862 M
VK2FJO	47 X 39 =	1833 M
VK2XDG	44 X 37 =	1628 M
VK2AST	44 X 35 =	1540 M
VK2BUV	43 X 35 =	1505 M
VK2HS	43 X 33 =	1419 M
VK2XZZ	39 X 35 =	1365 M
VK2HZ	40 X 35 =	1360 M
VK2BHG	40 X 35 =	1360 M
VK2WH	40 X 33 =	1320 M
VK2WI	38 X 32 =	1216 M
VK2YEW	38 X 32 =	1216 M
VK2AGF	39 X 31 =	1209 M
VK2CKL	37 X 30 =	1110 M
VK2ATV	35 X 31 =	1085 M
VK2BQS	35 X 30 =	1050 M
VK2XGX	35 X 25 =	1050 M
VK2KFU	34 X 28 =	952 M
VK2ZQA	34 X 28 =	952 M
VK2ELS	33 X 26 =	858 M
VK2XGK	33 X 25 =	825 M
VK2ZFZ	30 X 27 =	810 M
VK2AUE	29 X 44 =	696 M
VK2TSO	26 X 22 =	572 M
VK2CZZ	26 X 20 =	520 M
VK2DRR	24 X 21 =	504 M
VK2ZTM	24 X 20 =	480 M
VK2END	21 X 19 =	399 M
VK2XEH	22 X 18 =	396 M
VK2XDW	20 X 17 =	340 M
VK2BMX	19 X 17 =	323 M
VK2HT	20 X 16 =	320 M
VK2AXT	17 X 17 =	272 M
VK2AIC	15 X 14 =	210 M
VK2XHQ	14 X 13 =	182 M
VK2XGJ	12 X 12 =	144 M
VK2XNF	12 X 11 =	132 M
VK2XGM	10 X 9 =	90 C
VK2AMV	9 X 8 =	72 C
VK2GJ	5 X 4 =	20 C
VK2KAT	1 X 1 =	1 M
VK2ZKQ	1 X 1 =	1 M

M denotes Metropolitan zone
C denotes Country zone

First Overall
VK2BIT with 2714 points

Second Overall
VK2DLE with 2193 points

Third Overall
VK2KAA with 2132 points

First Country
VK2XGM with 90 points — Byron Bay

Second Country
VK2AMV with 72 points — Forbes

Third Country
VK2GJ with 20 points — Brunswick Heads

Contributed by Peter O'Connell VK2EMU

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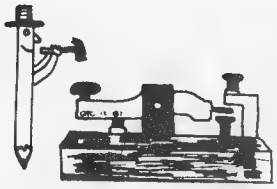
- AMATEUR REF BOOKS (RSGB & ARRL HANDBOOKS), VHF MANUALS, ANTENNA MANUALS & MOTOROLA NATIONAL DATA BOOKS
- FULL RANGE 27 MHZ & 477 MHZ CB RADIO & ACCESSORIES
- UNIDEN SCANNING RECEIVERS
- COMPUTERS
- WELZ TP-25A 50-500 MHz DUMMY LOAD — POWER METER



Pounding Brass

Gilbert Griffith VK3CQ
7 Church Street, Bright, Vic. 3741

Have you noticed of late, a decline in your operating standards?

Are you becoming bored with the quality of your Morse contacts?

Perhaps we can blame the low sunspot cycle, as for the last few years we are more likely to have been chatting to the locals than working a lot of foreign operators. Are we getting sloppy?

Every amateur using the HF bands in Australia has passed an examination to prove that he can send and receive plain English text in Morse code. Even if you are a newcomer you will recognise that passing the examination has very little to do with operating on air successfully. We soon discover that we have been taught *nothing* about operating on air, so we get nervous. More nervous than we did before the examinations. And a great percentage of amateurs, unfortunately, never bother with Morse code at all. Those who do persist find many pitfalls to developing into a finished Morse operator, not in the least of which is the acquisition of bad habits. Many of these come from mimicking your peers and elders, some of whom are themselves the victims of bad CW habits.

Through the years amateur radio has developed a number of operating standards and procedures. If we all use different procedures, we will have difficulty in communicating with each other. This is especially important when dealing with non-English speaking amateurs. You can find the standard procedures in the Call Book, ARRL and RSGB Handbooks, etc. Next month I hope to expand on them. However, no matter how well or how fast you can send and receive, you will *still* come up against problems if you:

a) are on the wrong frequency, or
b) don't listen, or
c) don't think before you send.

a) THE RIGHT FREQUENCY

Although it is quite in order to operate split or duplex, it is usually unnecessary and wasteful of valuable spectrum space. Nothing is more frustrating than to work a net which is spread over 2 kHz or more of bandwidth. Not only do you have to juggle the RIT knob, but you may not know the proper net frequency, and you will not even hear a station if it is outside the passband of your receiver. All it takes is a knowledge of how your particular rig works (read the instructions) and the special effort, no matter how small, of tuning to the *exact* frequency. It will help if you turn off the RIT.

b) LISTENING

The Australian Call Book and most other publications are most specific, "Listen first before calling CQ and ask if the frequency is occupied at least twice."

It is no good listening if you have the attenuator in circuit, or if you are on the wrong antenna, so, whilst you are checking the little details (RIT off) you can jot down the date and time, frequency etc, in your notebook. A friend of mine recently related that he spent the weekend listening for moonbounce signals, something that involves a lot of setting up with antenna direction, amplifiers, etc. Only to discover the antenna coax lying on the bench! So remember to check the details while you are listening. If you hear someone using the frequency you can either wait for them to finish, change frequency, or, of course, you could turn on the linear an walk all over them. I am being sarcastic but it seems to happen often enough, especially if QRP stations are on the frequency. You might also care to have a look at your frequency list to see that there is no net scheduled for the next half-hour or so on that frequency. Then simply call QRL? twice before you use the frequency for tuning, select your power requirement and call CQ only if you hear no reply (don't forget to use your dummy load!).

If you wish to tail-end, break-in, or join a net, it is only polite to move up or down a few kHz and tune your rig there, using the above procedure first. Then listen on the frequency in use until it is time to send. If you like to listen to a 1000 Hz note, your transmit frequency will probably be 250 or 300 Hz low, check your instruction manual and know the various offsets your rig has — most commercial rigs transmit 600 Hz down and the passband favours a tone of 750 to 800 Hz.

Remember your transmit frequency will be way out is you accidentally leave the RIT on. As you can see, the above is all learned through listening, and although it becomes second nature after a while, it is a bit of a chore at first. We haven't even touched the key yet!

c) WHAT TO SEND

To many people, operating time is precious. There are few amateurs who will stay around while someone "waffles" on about the weather or calls CQCQCQ constantly for minutes on end. Morse code is slow enough already, we don't ums, ahs, there's or call signs *every* start and finish of *every* over. You know what I mean, that is why we have to learn so many abbreviations. It is common (if unofficial) to send "R" when returning to a contact to indicate that you have received the previous over. "Okay on your rig, antenna, weather, power" etc, etc, ad nausium, is not only superfluous, but time consuming. We would get nowhere if we spent half the time on air repeating back everything said on the previous over. Don't laugh! I have heard it done. You can take it for granted that, if the other station sends "R" he has received your over. If he misses something he will question you for a repeat. You can bet that an operator "rabbitting-on" about trivialities will provide all the listeners with an opportunity to nip out of the shack and they may then miss something important.

Here are a few quick guidelines:

Don't send "R" if you did not copy or read the *whole QSO.*

It is only required to identify every 10 minutes, merely send "de VK3CQ" as appropriate at the start or end of an over when you notice that 10 minutes has elapsed. It is certainly not necessary to send *both* call signs at the start and finish of every over.

If you are rag-chewing and wish to over, merely send a fullstop and "K".

If you are on a net, send the next station's call sign followed by your own. It is a waste of time raving on by sending "I will keep it short and pass it on to Fred as I think it is his turn next" as you will have taken over a minute to send that much if you are working at 10 WPM or so! ! !

Make your good-byes short and sweet.

Have your feelings been hurt because you were just getting interested in a QSO and the other station sent "QRU 73 VK3XXX de JA1XXX SK"? Many operators tend to over-compensate and may spend five minutes or so merely saying good-bye. This can be downright painful if you are in a hurry to nip out of the shack. "SK" is all you will get in a contest, don't let your feelings be hurt by this. A "GL" or "73" sent during a contest is really a bonus and may cost the sender valuable points.

By following standard procedures well, you can take pride in the fact that the people listening will be learning from you. Other operators will enjoy talking to you and you will make many more enjoyable contacts. Don't be shy in giving praise to others whose style you admire, they may be fast and accurate, or easy to copy, if you like their Morse, say so. Conversely, if someone is off frequency or too fast for you, they will appreciate it if you tell them. It is not much good pretending you can copy bad spacing, be polite, but tell them to slow down. That is QRS, not QRN. There are Q codes for some, and old (but good) Z codes for others.

QRG	Your exact frequency is . . . kHz.
QRH	Your frequency varies.
QRI	Your note varies.
QRK	The intelligibility of your signal is (1 to 5).
QSW?	Will you send on . . . kHz or MHz?
ZCK	Check your keying.
ZCL	Transmit your call letters intelligibly.
ZDM	Your dots are missing.
ZSU	Your signals are unreadable.

There are also a number of QN codes for net operation that I hope to give in next month's column.

CW OPERATORS QRP CLUB

I have recently relented, contrary to my policy of not joining any more clubs, and was accepted for this club in November. Even though I do not usually operate QRP, I believe it is the only CW-only club in Australia and, therefore, well worth joining for that reason alone. I hope my home-brew equipment will now get some use.

The clubs three basic aims are:

1. Promote the use of low-powered two-way radio communication in the amateur service. (QRP for all club activities means five watts maximum output to the antenna).
2. Promote the use of CW mode.
3. Promote "home-brewing" of all QRP station equipment used by members.

Current fees as at the end of 1987 are — VK $A10, ZL $A12, DX $A14. A bulletin is sent quarterly. For more information or for applications contact Len O'Donnell, 33 Lucas Street, Richmond, SA. 5033.

I hope to have more information on the club available in future as I become more involved and get the "bugs" out of my equipment. I hope you will support them too. If you have any special interests please let me know.

BALLARAT HAMFEST

It was a long trip, four hours each way, but well worth the effort. My thanks to the President, Ron VK3XOA and Annette for providing my accommodation on Saturday night.

The Morse Speed Test was a bit of a speed writing test, but typewriters were allowed, even though no one brought one. I will give you a hint if you want to be ready for next year. Make up a tape of random letters and numbers with very close spacing and **no** breaks. A lot of fun. Thanks Ballarat Club and see you next time.

73, Gil VK3CQ.

REMEMBER

When inquiring about products published in AR always mention where you read of the product.

Electro-Magnetic Compatibility Report

What can we learn from an improvised Jacky Test?

Hans Ruckert VK2AOU
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

EMC engineering distinguishes between three different ways wanted and/or unwanted RF radiation may enter electronic equipment.

1. The signal may enter via the antenna and affect the front end. The front end should have sufficient selectivity and signal handling capability (dynamic range) to select only signals which are specifically transmitted for the service appropriate to the equipment.
2. The signals may enter via attached leads, interconnecting cables (VCR to television set, turntable to AF amplifier, etc) or the mains cable and loudspeaker cables.
3. The signals may be picked up by the components and wiring of the equipment chassis, because of inadequate shielding and earthing.

For all three EMC problems there are standards by DIN (Deutsche Industrie Norm = German Industrial Standard) and VDE (Verein Deutscher Elektrotechniker = Association of German Electrical Engineers). Many DL radio amateurs are prominent members of these organisations and committees, also executives in the electronic industry.

The DARC speaks for roughly 50 000 members, about 80 percent of all DL amateurs, with a fairly strong voice.

The third mentioned case — RF pick-up by chassis components and internal wiring — is investigated with the "TEM Test Cell" called "Jacky". The DIN standard No 45 305 Part 302 describes the test equipment. In order to obtain both qualitive and also quantitatively precise results, which can be repeated by all concerned and anywhere in the world, usable in a court of law, very detailed information is given. Precision equipment for the generation of the wanted and unwanted signals, matching circuits, filters, field strength meters, blocking circuits, and load resistor, as well as the screened room and the dimensions of the test cell are specified. This information was distributed world-wide — including Australia — via the ITU, because all countries face the same problems. Australia is not a "different country" as far as EMC is concerned!

Radio amateurs have been known for not giving up too soon, from the early days, when they discovered the usefulness of short waves for low power DCX communication, to the present time, with the construction and operation of satellites. It is therefore of great interest to see how far we can simplify the Jacky test, using only radio amateur equipment and still getting useful and expected results. We may not know whether the RF field to test a television set is 2.8 or 3 volts per metre, but we can definitely find out whether one set is 100 times more immune to unwanted power from an amateur transmitter than another television receiver from a different manufacturer. Meaningful test results have been obtained with:

- Amateur band transmitter (100 watt PEP maximum adjustable from zero)
- A match-box, so that the transmitter sees 50 ohm as load
- A low pass filter with about 70 dB attenuation for frequencies above 45 MHz
- An SWR bridge
- A dummy load 50 to 200 ohm
- A mains line filter (home-made)
- A multimeter with diode RF probe (home-made).

The television set to be tested should have a coaxial feeder to the television antenna for the wanted signal (if no signal generator for this signal is available).

All radio amateurs should have this equipment.

A further requirement is two pieces of sheet metal of the necessary size and shape to form the test cell (a wideband Lecher line). Parts of this line can be made from kitchen-type aluminium foil.

Photograph depicting Improvised Jacky Test.

The block diagram shows the assembled equipment interconnected with coaxial cable. The photograph shows one way of doing it.

An aluminium sheet is placed on a chair, It is the same size as the base of the television set. At both sides, smaller sheets of aluminium are attached and the ends at both sides carry coaxial fittings. This is the earthed plate. The mains line filter is attached to the right hand end of the earthed plate. The unwanted signal from the television is connected to the left hand coaxial fitting. The signal generator output cable goes to the television set antenna terminal. The test cell output coaxial connector is attached via a coaxial cable to the load resistor (dummy load), which is in this case a 100 ohm resistor combination capable of handling 20 watts continuously (or 100 watts in short pulses). The RF probe enables the voltage across this load resistor to be indicated by the voltmeter. On top of the television set, two plastic cups are used as spacers to carry the top (RF-carrying) plate. A handy way to extend this RF line plate is to put aluminium foil on top of the upper plate and let it hang down at both sides. The ends are brought to a point and connected to the centre pin of the coaxial fitting. The transmitter could be operated with the carrier only in AM mode, or for SSB an audio generator (homemade) was used as a source. (Two to ne could also be used). A television antenna may replace the signal generator as source for the wanted signal of one millivolt if the television antenna has a coaxial feeder. A picture just free of snow will be produced on a typical television set by this order of signal.

TEST NO 1

The first television set was a black and white model T-19-P3 from General Electric, purchased in June 1969. Removing the rear cover showed that the designer was most likely an American radio amateur who understood his job very well. The company also deserves praise for allowing the designer to do his job properly. The metal chassis could be earthed. It had openings for the valve holders and otherwise covered the printed board. The tuner and EHT components were fully shielded. A large shield was placed above the picture tube. All these metal parts were interconnected at several places with 12 millimetres wide short metal strips, thus of low inductance and resistance. The mains cable had three cores and the earth lead was connected to the chassis.

For radio amateurs it is only of interest how the equipment behaves when the unwanted legally transmitted signal is on an amateur band frequency. The television channels 2, 7, 9 and 10 were tested, with the transmitter in the 20, 15 and 10 metre bands. The unwanted transmitted signal was tuned over the whole amateur band to find the most critical frequency. Sometimes more than one critical frequency was found (as shown by two readings in the table). Channel 2 and 21.4 MHz transmitted frequency are a difficult par. With lower levels of the unwanted channel signal the AGC increases the front end and IF gain of the television set, but due to limited front end selectivity the harmonic free 21.4 MHz signal reaches the television mixer stage.

Here in the mixer, the harmonics are now generated, with the same result as if the transmitter had produced them in the first case. The transmitter has about 70 dB attenuation of the third harmonic, and the low pass filter add another 70 dB for frequencies above 45 MHz. Therefore, it is not an incoming third harmonic of the 21.4 MHz transmitted signal which affects the television set. This problem becomes even worse when the transmitter is on 28.8 MHz, and especially with the television on channels 7, 9 and 10, because the front end selectivity gets worse at higher frequencies (lower L/C — ratio, higher RF losses of the tuned circuit components) and the transmitted signal is closer to the television IF (intermediate frequency) so can reach directly the high gain IF amplifier stages. By comparing the field strength values measured by DL1BU (*Ama-*

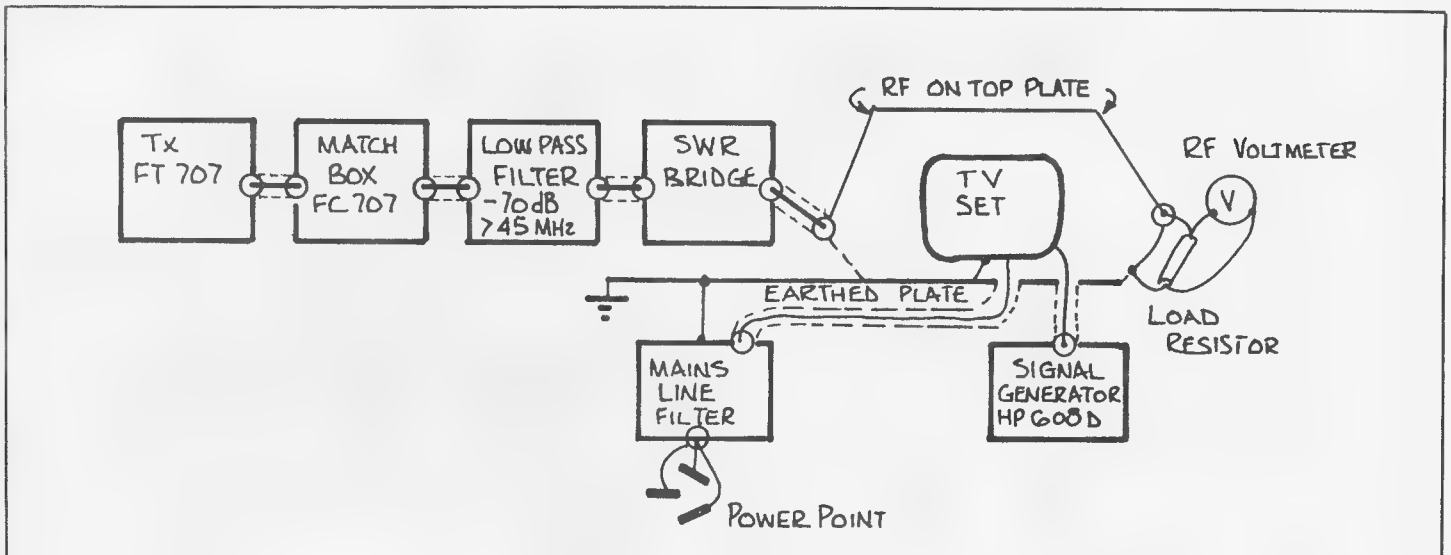


Figure 1: Improvised Jacky Test.

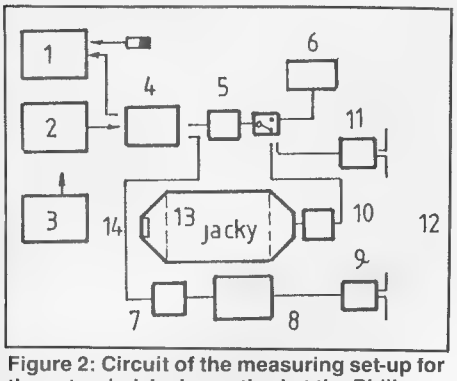


Figure 2: Circuit of the measuring set-up for the extended Jacky method at the Philips measuring cabin at the Krefeld plant.

1 Signal generator up to 30 MHz
2 Signal generator 30. . .300 MHz
3 External modulator
4 Low pass filter
5 Matching network (also 10 and 7)
6 RF voltmeter
7 See 5
8 Wideband amplifier
9 Balun (also 11)
10 See 5
11 See 9
12 Dipoles, 2 x 10 metres rolled up, one placed at the top wall and one placed at the bottom wall of the measuring cabin
13 Jacky Lecher line, 200 ohm impedance wideband
14 200 ohm load resistor (dummy load)

teur Radio January 1987, page 53) which can be expected around a typical amateur radio transmitter installation running 400 watts PEP, we can understand the problem. FTZ (the German DOC) and DARC (the German WIA) wanted a test cell fie'd-strength of 10V/m, the industry fought for 3V/m (present standard) and the EEC wants only 2.8V/m, although several leading manufacturers have achieved mush better immunity already. In the USA 1V/m was suggested for voluntary introduction. This is a next to useless step — and they know it!

TV CHANNEL	WANTED SIGNAL			
UNWANTED SIGNAL	uV	MHz	V/100 ohm	MHz
2	1000	66.2	10	14.3
2	100	66.2	7	14.3
2	10	66.2	3	14.3
7	1000	176	7	14.3
7	100	176	4	14.3
7	10	176	2	14.3
9	1000	198/191	7 13	14.3
9	100	198/191	2 6	14.3
9	10	198/191	1.5 2	14.3
10	1000	212	7.5	14.3
10	100	212	4	14.3
10	10	212	0.7	14.3
2	1000	68.2	4	21.4
2	100	68.2	0.5	21.4
2	10	68.2	<0.4	21.4
7	1000	176	7	21.4
7	100	176	4.5	21.4
7	10	176	2	21.4
9	1000	198/191	3 13	21.4
9	100	198/191	0.6 6	21.4
9	10	198/191	0.3 2	21.4
10	1000	212	7.5	21.4
10	100	212	3	21.4
10	10	212	0.6	21.4
2	1000	68	4.5	28.8
2	100	68	1.5	28.8
2	10	68	0.3	28.8
7	1000	182	0.6	28.8
7	100	182	0.1	28.8
7	10	182	~0.01	28.8
9	1000	202	0.3	28.8
9	100	202	0.05	28.8
9	10	202	0.03	28.8
10	1000	212	0.15	28.8
10	100	212	0.01	28.8
10	10	212	~0.01	28.8

1 mV modulated to 80 percent with 1 kHz audio is the standard test cell wanted signal.

The listed voltage reading of the unwanted signal are those where either the picture or the audio began to be affected, tuning to the most critical signal frequency.

TEST NO 2

This television set was a VHF-UHF colour set of local manufacture, purchased in November 1977. It ad a small metal chassis for the power supply, which was earthed via the three-core mains cable and three-pin plug. Good features were the shield around the picture tube, and the shielding covers of the tuners and IF strip, which were both open on the printed board side. Not so desirable was the unshielded EHT section, bundles of unshielded cables of ½ metre length, and the unshielded hinged circuit boards.

TV CHANNEL	WANTED SIGNAL			
UNWANTED SIGNAL	uV	MHz	V/100 ohm	MHz
2	1000	68-70	25	14.3
2	100	68-70	10	14.3
2	10	68-70	5	14.3
7	1000	180-190	1	14.3
7	100	180-190	0.6	14.3
7	10	180-190	0.6	14.3
9	1000	200	0.7	14.3
9	100	200	0.7	14.3
9	10	200	0.7	14.3
10	1000	212	0.7	14.3
10	100	212	0.7	14.3
10	10	212	0.7	14.3
2	1000	70	0.03	21.43
2	100	70	0.02	21.43
2	10	70	0.01	21.43
7	1000	180	1.5	21.43
7	100	180	0.8	21.43
7	10	180	0.7	21.43
9	1000	202	4.5	21.43
9	100	202	4	21.43
9	10	202	0.6	21.43
10	1000	212	2	21.43
10	100	212	0.2	21.43
10	10	212	0.2	21.43
2	1000	68	3	28.8
2	100	68	0.5	28.8
2	10	68	0.3	28.8
7	1000	189	0.3	28.8
7	100	189	0.2	28.8
7	10	189	0.01	28.8
9	1000	199	0.05	28.8
9	100	199	0.01	28.8
9	10	199	>0.01	28.8
10	1000	210	1	28.8
10	100	210	0.3	28.8
10	10	210	<0.01	28.8

28	no	sig	0.6	30 MHz
28	no	sig	20	21.4 MHz
28	no	sig	10	14.3 MHz

In the television IF range 36-37 MHz 40 mV at antenna terminal caused IF breakthrough of the front end.

COMMENT

With the exception of Channel 2 and 14.3 MHz transmitter operation, the situation seems to be very critical. Even this improvised Jacky test reflects quite clearly the design features of different television sets and construction concepts. Hi Fi AM/FM tuners, audio amplifiers, VCRs, and tape recorders, computers, etc may be tested in this way. The test can be carried out with typical, and usually available, amateur station equipment pulse some sheet metal.

One may test electronic equipment family members intend to buy; or demonstrate to a neighbour, sales or service person, how well the offered equipment may stand up to legal radio signals. These signals may come from a nearby television or BC high power station too, not necessarily from our amateur transmitter. In one case, garden club members of some towns (Hamburg was one) used long wire antennas to catch enough RF energy from a nearby 100 kW (plus) broadcast transmitter to feed light globes. They were later charged with stealing transmitter energy!

Unwanted television antennas also absorb RF energy from amateur radio transmissions. It is hoped that many readers will soon test their television sets, etc and the WIA could perhaps pass the collected results on to DOC.

CAUTION: Dangerous voltages are present in the circuitry of all televisions. Remove power before removing cover and/or working on circuitry.

Many of us look back with nostalgia to the days of essay-type examinations which let us use our sometimes active imaginations. We do not accept easily the multiple choice examination. It is 'not the same'. Many of us sat for the common 'seven out of nine' essay examination. It was not always so.

The 'answer all questions' examination was used during the 1920s. The most interesting changes were from the almost wholly descriptive towards a higher theoretical content and the development of a structured question paper. The two examples below illustrate these changes fairly well. Perhaps the multiple choice paper was simply an inevitable step in evolution towards the impossible perfect exam.

The emphasis on circuit diagrams had already declined in 1924. The reduced requirement for two or three in each examination continued until the multiple choice examinations were introduced. Perhaps the inability of multiple choice questions to cope with circuit design and complex circuit principles is the most important limitation of this sort of examination for amateur radio. There is not much scope for careful circuit analysis.

Those who have passed recently might think about how they would have coped with these papers. You might not need much maths but you would certainly need some drafting skill, and reasonable neatness. If you should be tempted to design and build an arc transmitter circa 1920, please take note that there are no questions on interference, bandwidth, and unorthodox transmissions generally.

AMSAT Australia

SATELLITE ACTIVITY FOR THE MONTHS OF SEPTEMBER/ OCTOBER 1987.

1 LAUNCHES

The following launching announcements have been received:

INTL NO 1987	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
083A	Cosmos 1887	Sep 29	USSR	90.5	406	224	62.8
084A	Cosmos 1888	Oct 01	USSR	24hr03m	35980		1.4
085A	Cosmos 1889	Oct 09	USSR	90.4	400	216	70.0
086A	Cosmos 1890	Oct 10	USSR	92.9	442	414	65.0
087A	Cosmos 1891	Oct 14	USSR	104.9	1030	957	83.0
088A	Cosmos 1892	Oct 20	USSR	97.8	678	647	82.5
089A	Cosmos 1893	Oct 22	USSR	89.7	374	179	67.0

2 RETURNS

During the period 82 objects decayed including the following satellites:

1977-102A	ISEE 1	Sep 26
1977-102B	ISEE 2	Sep 26
1987-075A	PRC 21	Oct 04
1987-077A	Cosmos 1882	Oct 06
1987-083A	Cosmos 1887	Oct 12

3 NOTES

Cosmos 1887 carried instruments for research into the effects of spaceflight on monkeys and other biological objects as well as radiation safety and physics. Experiments are also being carried out to study and use space for peaceful purposes. Taking part in this work are scientists from Hungary, Germany (GDR), Poland, Rumania, Czechoslovakia, United States of America, France and the European Space Agency.

The descent module of the satellite touched down at 0403 UTC, October 12, 1987, in an area which was not its predetermined landing site.

—Contributed by Bob Arnold VK3ZBB

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Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
PO Box 883, Frankston, Vic. 3199

EXAMINATION PAPER (c1920. Marks for each question not shown)

1. Give a diagram of a Valve Transmitting Set that you propose to use.
2. What are the relative advantages of direct coupled, two and three coils, inductively coupled sets.
3. Give the dimensions of your proposed aerial and calculate the natural wavelength of same.
4. Show a diagram of an arc transmitter.
5. Describe the various components of the arc set you propose to use.
6. Give a diagram of a receiver with three valves employing one HF, one LF, and one detector, utilising regeneration which is permissible under the regulations.

Amateur Operator's Certificate of Proficiency. Melbourne, September 23, 1924 (10 marks for each question)

1. Define
   (a) Ohms Law,
   (b) Wavelength,
   (c) High frequency resistance.
2. Give a diagram of a 10 watt transmitter capable of being used for CW Tonic Train and Telephony, showing the source of primary energy supplied, the means of rectification, smoothing, etc, and including indicating meters in the aerial circuit, high tension and low tension circuit. State the high tension and low tension voltage, and the amount of plate current at maximum efficiency.
3. Explain briefly the functions of the various parts of the apparatus shown in Answer No 2.
4. Show a diagram of an instrument capable of rectifying alternating current in full wave form by the use of an electrolyte, and explain its operation.
5. (a) Take your own aerial as an example and state how you would ascertain its natural frequency.
   (b) Explain briefly the theory of the three electrode valve.
6. (a) Describe the action of any accumulator you are familiar with.
   (b) Explain the theory of a counterpoise.
7. Explain the construction and operation of a microphone suitable for Radio Telephony.
8. Show a diagram of a three valve receiver designed for use as a High Frequency amplifier, Detector and Audio Frequency amplifier. Arrange the circuit so that, with a change over switch or unit-capacity key, the following combinations are possible:
   (a) One Detector only.
   (b) High Frequency Amp and Detector.
   (c) High Frequency Amp, Detector and Low Frequency Amp.
   Plugs and jacks in this circuit not to be used.
9. (a) What is decrement, and what decrement is permissible in a CW transmitter?
   (b) How do you know when your receiver is in a state of oscillation, and what effect will an oscillating valve have on damped wave reception?
10. (a) What will be the total resistance of three resistances of 6 ohms each —
    (a) connected to parallel.
    (b) connected to series.
    (b) What will be the total capacity of four condensers each 5 mf connected —
    (a) in series.
    (b) in parallel.

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Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

1987 CONTEST

For me the contest got off to a very slow start, and things went from bad to worse later in the evening on 80 metres, with 5/9+ static. After battling with the noise level for an hour or so I decided to call it a night!

My only DX-YL contact was Diana G4EZI, although I was informed that some of the North American YLs were working the contest. Unfortunately, I didn't catch up with any of them. Probably a case of not being in the right place at the right time.

Once again I would like to thank the many OMs who gave us their support on phone and CW, and helped to make the contest successful.

We have a winner for the Five Year Trophy, and the Florence McKenzie Trophy, and hope to have the contest results in time for next month's *Amateur Radio.*

At the time of writing, 27 logs have been received, 16 ALARA members and 11 OMs, (one of these being from Finland). Six were DX logs, and there were three check logs.

In conjunction with South Australia's Jubilee 150, Carol VK5PWA, was co-ordinator of a project involving 15 unemployed young people. Although they did not receive the award, we would like to congratulate Carol on a fine achievement.

Jobless tourism project in line for top award

PORT LINCOLN — A Jubilee 150 project which involved 15 unemployed young people in the production of Port Lincoln tourist brochures is in the running for an Australian Tourism Award to be decided in Perth on Friday.

The project, co-ordinated by Ms Carol McKenzie, of Port Lincoln, won an SA tourism award for the Port Lincoln City Council this year, under the category of the most effective use of funding by a local authority to promote SA tourism. The win made it eligible for the national titles.

The project cost $130 000, which came from the Office of Employment and Training and was managed by the city council.

Ms McKenzie said each member of the team had helped research, design, write, print and distribute a series of eight brochures highlighting Port Lincoln's best tourist spots, eating places, entertainments and historic sites, including the city's cemetery.

The mayor of Port Lincoln, Mr Tom Secker, said there had been a heavy demand by tourists for the brochures. He will attend the national awards ceremony in Perth and is hoping to bring back a prize.

From *The Advertiser,* Monday, October 19, 1987

YL ACTIVITY DAY

I have received a letter from Diana G4EZI, regarding YL Activity Day, which is held on the sixth of each month. Diana says:

"I am trying to get YL Activity Day on the sixth of the month reactivated. I know the information still goes out faithfully in all the YL magazines, but I do not think anyone actually goes on these days! It used to be such fun in the "good old days" of '79 when it first started and lots of YLs took part, so now that conditions are improving, I think we ought to get it revitalised. It just needs a bit of enthusiasm!"

YL Activity Day has not been well patronised of recent years, with poor propagation most of the time, or no propagation at all. Perhaps now things are picking up again we should consider this opportunity to get together on air for a chat.

Listen on the hour UTC:

PHONE — 3.588, 14.288, 21.188, 21.388, 28.588, 28.688 MHz

CW — 3.530, 14.058, 21.058, 21.133, 28.088, 28.133 MHz.

If no YL activity is heard, call "CQ YL" as others may be listening too.

YL-DX

Annabelle N7GGH/KH9, has been active from Wake Island, and Lois WB3EFQ/PJ7, Nellie ZE1CI, Geny PY5YL and Amanda LU1MFZ (mainly operating CW), have given new YL countries to many needing them.

Jan WB2JCE and Mary Lou NM7N, will be going on a DXpedition to Niue Island this month and hope to be on air from February 21 to 26, using both CW and SSB. Call signs will be ZK2JS and ZK2MB, respectively. QSL via home call.

NEW MEMBERS

A warm welcome to:

Noela VK4MBP, Val ZL3GW, Christine VK4KCA, Phyl Vk3PYL. Great to have you in ALARA.

Bye for this month, 73/33

Joy VK2EBX

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Intruder Watch

As mentioned in the January column, the 28 MHz rubbish coming from Asia is increasing, and, as forecast, is now being heard in southern Australia. Formerly it was only being heard in VK8 and VK4. This will turn out to be bad news. Let us know if you hear it. Short Asian contacts, no amateur call signs, from 28.000 up to about 28.700 MHz.

The DARC (West German) Intruder Watch received a telegram to the effect that "Radio Pakistan (Islamabad) has discontinued the use of the frequency 7.100 MHz from October 20, 1987" — Hooray! Chalk one up for DARC.

October last year saw reports come in from VK2s DEJ, OS, QL; VK3s AMD, XB; VK4s AKX, BG, BHJ, BTW, DA, OD; VK5s GZ, TL; VK6RO; VK7RH; VL8s HA and JF. Many thanks to those who helped out. Statistics were as follows:

87 AM intruders;
176 CW intruders;
109 RTTY intruders;
87 intruders using other modes, and
49 intruders identified themselves.

THE MODE FOR THE MONTH

This month we deal with the mode R7B, which is Amplitude Modulated, reduced carrier, multi-channel voice frequency telegraphy. Being a mode that amateurs are not permitted to use makes it a little easier to identify as an intruder.

It sounds to me like a timber yard circular saw, and, once heard, is easily remembered. If you hear it on any of the following band segments, you can be sure that it is an intruder.

80-metres — 3.5 to 3.7 MHz;
40-metres — 7.1 to 7.3 MHz;
20-metres — 14.0 to 14.25 MHz;
15-metres — 21.0 to 21.45 MHz, and
10-metres — 28.0 to 29.7 MHz.

R7B is by no means a rare signal to be heard on the bands, and often occupies a bandwidth up to 30 kHz, but it is usually around 5 to 6 kHz wide.

Next month we will look at the mode B9W. See you then.

How's DX?

INTERESTING QSOs ON THE EAST COAST

November 16, 1987 — 14 MHz, CW: Norman GB4ORH, from Hull, England. Special Event Station for launch of *Operation Raleigh,* a scientific expedition all over the globe for young adventurers. QSL via the bureau.

December 5, 1987 — 14 MHz, SSB: Terry TO8KD, from Noumea, PO Box 2116, Noumea, New Caledonia. During December amateurs in FK8 were using the Special Prefix to commemorate the South Pacific Games, which were held in Noumea during December.

December 5, 1987 — 14 MHz, CW: Laurent J28EN, from the Republic of Djibouti. QSL via PO Box 1076, Djibouti.

INTERESTING QSL CARDS RECEIVED

PZ1DC (Direct); JW1LK (Bureau); BV0BG (Senator Barry Goldwater (from the USA) on a Dxpedition to Taiwan in January 1986) (via Bureau).

Contributed by Steve Pall VK2PS

NAVASSA ISLAND DXPEDITION

Bob N2EDF and Tony K2SG, of the 1985 6Y5NR?KP1 DXpedition, will lead an assault on KP1/Navassa Island, from February 10 to 18. The other members of the party will include Lefty KE4VU, Dan N4GNR and Bob W3GH. A charter has been arranged from Kingston, Jamaica.

The DXpedition will be operating sideband as N2EDF/KP1, and CW as K2SG/KP1, using 160 through to 10 metres, 24 hours a day, with the possibility of RTTY and SSTV. QSLs will **not** be via the home calls, and will be announced later.

Club Corner

BALLARAT AMATEUR RADIO GROUP HAMVENTION

Ballarat Amateur Radio Group once again held their Annual Hamvention at the Marty Busch Sports Ground on Sunday, November 1, 1987.

Hamvention Organiser, Kevin VK3WN.

Kevin VK3WN, assisted by an enthusiastic band of helpers, provided an excellent spread of "'what everyone likes to see at a convention" — displays, events, eyeballs and, of course, radio equipment.

The weekend began on the Saturday night with an informal counter tea which was well attended. Sunday saw the Hamvention begin. All major amateur radio brands of equipment were represented, preloved equipment dealers were also present. The DOTC stand and satellite television display were extremely popular as was the working packet radio display. Meanwhile, outside the foxhunters and other contestants were toiling away in 30 degree Celsius heat!

Lou VK3DFI (left) and Maurie VK3XEX — Chefs of the Day.

From left: Ewen VK3BMV, Ron VK3XOA and George VK3DOK.

As usual, an excellent lunch was provided by the BARG ladies.

The lucky winner of the special effort was Dick VK3AEX, with Ewen VK3BMV, being the highest points-scorer in the events section.

Thanks are extended to those who provided activities for the children, as a radio convention can be rather boring for children after the first five minutes!

Contributed by Ron Watkins VK3XOA, President, Ballarat Amateur Radio Group

ST GEORGE AMATEUR RADIO SOCIETY

The weekend of March 28/29 1987, was a centennial historical date for the city of Hurstville, NSW.

One hundred years ago the first steam train service starting at Hurstville and running to Cronulla was established.

The local municipal council and the Chamber of Commerce decided to pool ideas to present a really enjoyable weekend event and named it "The Great Steam Train Centenary Celebration".

A large section of the main road was closed off for the day to allow setting up many side-shows, stalls, food stands and musicians. The Council Civic Hall was a spacious exhibition area with widely differing displays of hobbies and arts. The St George Amateur Radio Society were happy to represent amateur radio.

Several amateur items were operating including a computer, VK2PD, giving video readouts of various sections of amateur radio. Two metres was fairly active for all to hear and was involved in the Hurstville to Cronulla Great Steam Train Race.

The fun race between vintage cars and the train, with VK2BZD using two metres on the train and VK2DQP in one vintage car.

Members of the club endeavoured to generate new interest for the club which is in the district, and distributed WIA literature when requested.

All who assisted with the display, club members or not, enjoyed the fine all-round show.

—Contributed by John Bunn VK2NDJ, for SGARS

VK2DQP took part in the Great Steam Train Race.

The St George Amateur Radio Display.

WICEN News

THE SMALLEST WICEN EXERCISE? ? ?

Peter O'Connell VK2EMU
3A Algernon Street, Oatley, NSW. 2223

Not every WICEN exercise or operation is an "all singing and dancing event" with two dozen operators, multiple nets and kilowatts galore. Several months ago, what could be the smallest possible WICEN event took place.

The Volunteer Air Patrol (VAP) and the Royal Volunteer Coast Guard (RVCG), are both members (as is WICEN) of the Volunteer Rescue Association (VRA), the umbrella organisation of such groups in New South Wales. The VAP and RVCC has organised a joint exercise for Sunday, October 18, consisting of a number of simulated air/sea searches off the coast between Sydney and Wollongong. This would give some RVCG personnel a look at the ocean from an aircraft, to understand the difficulities associated with looking for a speck on the ocean, as well as giving the VAP some experience in sea searches. The VAP were bases at Webberburn about 15 kilometres south of Campbelltown, while the RVCG were based at Garie Beach carpark. While these two sites were only 25-30 kilometres apart, the VRA low band VHF radios were unsuccessful because of hills in between.

A request was made for WICEN to provide a radio link between the two sites. Kevin VK2CKD and Peter VK2EMU, volunteered and headed out to Garie Beach and Webberburn. A link was made on two metres first via the Heathcote repeater and then switched to the WICEN repeater at Chatswood. This path was a little scratchy, but the operators were uninterrupted all day, except for one or two calls of "CQ JOTA"! Only about a dozen messages were passed all day, but these were used to co-ordinate the exercises, aircraft movements, etc. Once the aircraft got to 500 metres, direct communications from the aircraft to Garie Beach and Webberburn was possible on all frequencies — VRA VHF, Aircraft VHF, Marine VHF and Marine 27 MHz. One or two of the aircraft looked a little like an amateur's car — antennas everywhere.

On the whole a very small exercise, but one which showed other rescue groups exactly what WICEN could do, as well as giving the WICEN operators some practice working with them.

Beacons & Repeaters

Tim Mills VK2ZTM
FTAC BEACON CO-ORDINATOR

There have been several letters recently on both beacon and repeater matters — thank you. The Beacon Policy Paper will be further considered at the April Federal Convention.

At last year's convention, the subject of two metre repeaters above 147 MHz was discussed with respect to the effect the adjacent paging band was having on is operation. The subject has remained under investigation and the recent expansion of paging networks in VK2 has highlighted the need to do something. It is important to maintain an amateur presence in the top MHz. At present, the repeater inputs are at the top end, closest to the pager band. It may assist many repeaters to reverse the existing input/output which would add a further 600 kHz of separation to the repeater input frequency.

The repeater channels are included in the national band plan. A change requires a national vote. One problem a change would introduce would occur on the south-east coastline of Australia, whenever there was a trans-Tasman opening. The New Zealand repeaters use the same channels as Australia. If an opening were to occur, the respective countries' repeaters on the same channel would lock-up. This may be a small price to pay if it improves the lot that some in the system are at present suffering.

A repeater and beacon list was included in last month's *Amateur Radio.* Any corrections or updates should be sent to FTAC via the Federal Office.

HIGH-Q VHF/UHF CHIP CAPACITORS

For many years RF engineers have been hamstrung by the lack of good quality capacitors that are readily available in this country. Stewart Electronics are pleased to announce the release of a selected range of High-Q VHF/UHF multi-layer chip capacitors as one solution to the problem.

These capacitors are specifically designed for use in the VHF/UHF region in high current and high voltage applications, as well as in low noise applications. Whilst many people have used surface mount capacitors for RF use they are unfortunately not specified for that application and thus their characteristics are uncontrolled in many important aspects.

These multi-layer chip capacitors are characterised with graphs of AC current ratings at 100 and 500 MHz, Q figures at 100, 200, 400, and 800 MHz and self-resonant frequency.

General specifications are:

Dielectric	HQ (porcelain)
Temperature range	-55 to 125 degrees Celsius
Insulation resistance	> 10E12 ohms
Temperature coefficient	0 ± 60 ppm/C
Terminations	Palladium silver, nickel plated and tinned

VALUE pF	Stock No	Size	Volts DC	Q 100 MHz	SRF	Irms 500 MHz
1 0	CF256	0805	200	> 10k	6 GHz	0.9A
1 5	CF257	0805	200	> 10k	5 GHz	1.5A
2 2	CF258	0805	200	> 10k	4 2 GHz	2.0A
3.3	CF259	0805	200	9000	3.7 GHz	2.5A
4 7	CF260	0805	200	8000	3 GHz	5A
6.8	CF261	1111	400	5000	3 GHz	5A
10	CF262	1210	400	4000	2 GHz	5 5A
15	CF263	0805	200	3000	1.7 GHz	6A
22	CF264	0805	200	2700	1.5 GHz	6A
47	CF265	1111	500	1500	1.1 GHz	7A
100	CF266	1005	200	870	600 MHz	10A
470	CF267	1210	200	380	180 MHz	11A
1000	CF268	1210	200	NA	200 MHz	20A

For convenience in prototyping and experimenting, these capacitors are available in a labelled package of two pieces. Values not listed are available on indent in minimum quantities of 100 pieces per value.

High-Q VHF/UHF capacitors find application anywhere low losses, combined with high self-resonant frequencies are needed, such as filters, matching networks and resonant circuits, both power and small signal at frequencies up to 1500 MHz or so.

FILTERS:

When a filter is designed it is possible to predict its performance when using components of varying Q, or conversely a minimum Q can be specified for each element for a minimum calculated level of performance. As the Q of the components increases, so the actual performance of the filter will approach the theoretical performance of a filter using ideal components. At VHF and UHF frequencies where gain and noise figures are hard and expensive to come by, it is important that filters have absolutely minimal losses, thus making them an ideal application for High-Q capacitors.

POWER AMPLIFIERS:

Whilst metal clamped mica capacitors have desirable characteristics for use in power amplifiers, they can have performance degrading effects at higher frequencies and higher network Qs due to their own finite Q. High-Q capacitors will allow you to achieve gains closer to the maximum possible with a particular transistor, improvements of 3 dB in circuit gain have been noted at UHF frequencies.

With bipolar power transistors it is often necessary to place capacitors right at the base and collector terminals. These low impedance points are the most critical in terms of losses. At these points the circulating currents can be quite high and any losses can significantly impact overall performance. Many RF power transistor manufacturers now use High-Q capacitors in the test jigs for VHF and UHF transistors.

SMALL SIGNAL AMPLIFIERS:

Several areas of application suggest themselves for High-Q capacitors in small signal amplifiers. Their very low losses and lack of parasitics renders them useful for such jobs as source bypasses for GaAsFET preamplifiers. Matching networks at the input of low noise amplifiers need to have extremely low losses to allow the utilisation of the variable noise performance of the active device. Any losses ahead of the gain stage directly effect the noise figure obtained from that stage. By using High-Q capacitors, strip line inductors and microwave trimmers the performance of VHF and UHF low noise amplifiers can be significantly enhanced.

For further information, prices, etc, contact Stewart Electronic Components Pty Ltd, 44 Stafford Street, Huntingdale, Vic. 3166, phone (03) 543 3733.

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Forward Bias

Ken Ray VK1KEN
Box 710, Woden, ACT. 2606

After a long absence, news from the VK1 Division graces the pages of *Amateur Radio.* Much has happened in the Australian Capital Territory and surrounding area in the past 12 month, and I hope to fill you in on these events in this, and the next few issues.

MEETINGS

The monthly meetings of the Division continue to be well attended, with a variety of interesting speakers presenting topics ranging from the Ionospheric Prediction Service (IPS), military communications and two metre antennas. Most meetings have completely filled the Studio Room at the Griffin Centre, and coffee and biscuits are a regular feature of each meeting.

This year, 1988, has seen the start of a second monthly meeting, this time on the second Monday evening of each month. This has been dubbed the "Technical Interest Group" and the topics presented will be of a deeper technical nature than the general meeting topics.

Meetings are held in the Griffin Centre, Civic, and doors open at 7.30 pm, with the meeting proper commencing at 8.00 pm. As well as the previously mentioned coffee and biscuits at the conclusion of the meeting, the bookstall and the QSL bureau are available for members.

The Griffin Centre is between Bunda and Cooyong Streets in Civic, close to the main bus interchange and adjacent to car parking. The TIG meets on the second Monday of each month, in Room 3, which is upstairs at the Bunda Street end. The general meetings are held on the fourth Monday of each month, in the Studio Room, which is upstairs and the Cooyong Street end of the building.

All amateurs and interested persons are most welcome to attend, whether WIA members or not, VK1's or visitors.

DIVISIONAL BROADCASTS

The VK1 Divisional Broadcast goes to air each Sunday evening at 8.00 pm local time, using the Divisional call sign, VK1WI. Frequencies and modes are:

3.570 MHz LSB
28.485 MHz USB
52.075 MHz USB or
52.525 MHz FM
146.950 MHz FM (via repeater VK1RGI) or
146.900 MHz FM (via repeater VK1RAC)
438.375 MHz FM (via repeater VK1RIR) or
438.575 MHz FM (via repeater VK1RGI)

Call backs are taken on the above frequencies at the conclusion of the broadcast.

Broadcasts are re-transmitted on Monday evenings at 8.00 pm local time, on two metres only. On meeting nights, the re-broadcast is on the Tuesday evening.

REPEATERS

Considerable work has been done on VHF and UHF repeaters in the past year. Almost all VK1 repeaters have had considerable work done to them to improve their performance or add new facilities.

TWO-METRES

VK1RGI (146.950 MHz): After some considerable degradation in performance — not unexpected as the repeater has been in operations for over nine years — there has been a complete refurbishment of the Mount Ginini installation. A new hard line feeder was installed, and the repeater unit replaced by a modified commercial unit. The original unit is currently being refurbished, and will probably replace the Channel 6 unit. By the time this article "goes to press", a new antenna will probably be in operation. All this work has substantially improved the performance of Australia's highest amateur repeater. As well, a packet digipeater, on 147.525 MHz has been established on the site.

70 CM

VK1RGI (438.525 MHz): By this time, or not long afterwards, the 70 cm repeater will be finally installed on Mount Ginini.

VK1RIR (438.275 MHz): A second UHF repeater was developed, and it has been installed on Issacs Ridge, a major communications site within the Canberra metropolitan area.

The VK1 Division has now developed substantial expertise in developing, constructing and maintaining repeater equipment. Many people have helped over the past few years, and particular thanks are due to:

Neville VK1NE, Dick VK1ZAH, Maurie VK1MD, Tom VK1BUD, Rob VK1KRM, Neil VK1KNP, Paul VK1BX, Peter VK2APP and Carl VK1KCM.

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

ANNUAL GENERAL MEETING

Members of the NSW Division are notified that it is proposed to hold the 1987/88 Annual General Meeting on Saturday, April 30, 1988, at Amateur Radio House, 109 Wigram Street, Parramatta. The meeting will commence at 2 pm. Nominations for election to the Council and agenda items for the meeting will close at the Divisional Office on Tuesday, March 15, 1988. Council nomination forms are available from the Divisional Office.

SPECIAL CALL SIGN

The VK2 special call sign, VI88NSW is available for use by clubs and groups for periods of one week. Clubs have already been notified of the availability and a register is being maintained for a roster. Further information is available from the office or on broadcasts. Schedules of the various club operations are being given on the VK2WI broadcast. The alternative prefix 'AX' is available to all amateurs throughout this year.

GOSFORD FIELD DAY

A reminder that this event will be held at the Gosford Showground, regardless of weather, on Sunday, February 21. Because of the large attendance to this event, it has been decided by both VK2WI and VK2TTY to conduct their respective broadcasts for this weekend on Saturday, February 20. Check the broadcasts for the alternative starting times.

POSTCODE CONTEST

The trial contests conducted late last year proved popular. It has been decided to conduct a contest on the last Friday of each month, with different bands being used. Details via the broadcasts or a list is available from the office or your local club.

TRASH AND TREASURE

This event will be held on a regular basis on the last Sunday of each odd month, in the car park of the Parramatta office. The next event will be on March 27, at 2 pm.

CONFERENCE OF CLUBS

The next C of C will be held during April and will include discussion on the Federal Agenda Items for the Convention in Melbourne over the weekend, April 23/24. Club agenda items should be received at the Divisional Office by the end of this month.

NEW MEMBERS

R M Benafatto VK2CRB, Allawah
R L Carden VK2XRL, Chatswood
F Foti VK2XFF, Surry Hills
P L Leeper (Mrs), VK2JPA, Blacktown
J J Martin VK2JJM, Parramatta
E A McCloskey VK2KEM, Bundanoon
W J Mills VK2MCV, Shalvey
M Prochazka Assoc, Bronte
S E Sheridan VK2ZJH, Bondi
G R Tracey Assoc, Caringbah
J Van De Geyn VK2MDH, Bass Hill
F G Windsor VK2CFW, Lidcombe

VK3 WIA Notes

The following applications were received for the month of November 1987, and accepted by Council on November 26, 1987.

Harold Armstrong VK3TBM	East Preston
Christopher Arthur VK3PYH	Bendigo
Ken Dobson VK3BKD	Nunawading
William Jamieson	East Doncaster
John Luke VK3DUZ	Creswick
G V Marshall VK3MAN	Mount Eliza
Monash University Radio Club VK3ETS	Clayton
Gerdard Noss VK3CGA	Point Lonsdale
Allan Styles VK3TV	Devenish
Peter White VK3CTW	Melton South
Noel Winzenried	Bayswater

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

Back in November, it was my pleasure, once again, to attend the Old Timer's Luncheon. (And before any of you can make rude remarks about my age, let me tell you that I am one of a group of ladies who either have call signs, or are attached to one of the OMs present, who meet for lunch at the same time).

I think this is the fourth or fifth year now, that I have attended, and it is an occasion that I look forward to, every year. There is no hard and fast rule about how many years you must have had a licence, to attend this luncheon, so if you would like your name put on the invitation list for next years' luncheon, please contact George Luxon VK5RX, and he will see that you receive an invitation. My only complaint is that I never get around to talk to all the people that I would like to see. Many of them come down (or up) from the Country, and it is good to get this rare chance to see them. One of the saddest parts of the occasion is the calling of the roll of those who have become Silent Keys during the year, happily not as many this year as last, but perhaps more poignant because one of those was Jack Trembath VK5JT, who started and organised these luncheons, in conjunction with George VK5RX. Despite the fact that Jack was only licenced in 1974, he had been involved with amateur radio for many years (including giving CW lessons to would-be amateurs) and was considered an 'Old Timer' by many. Jack's place on the organisational side has been filled by Ray Deane VK5RK, who did an excellent job.

For several years now, George has asked me to draw the lucky number, for the prizes which are donated by various firms, etc. I may never be asked again! The first number I drew, belonged to Maria McLeod VK5BMT, (which I was pleased about, as I persuaded Maria to come along for the first time). When I pulled the second number out, and it was for Joy VK5YJ, I thought that I was going to have to leave without my dessert! Luckily for me, I managed to find an OMs ticket for the third prize and I am not sure if Barry Clarke VK5BS, (the recipient) or myself was the most pleased! I look forward to seeing many of you again next year.

Another group which I always enjoy meeting are the members of the Adelaide Hills Amateur Radio Society. There is no truth in the rumour that I only go for the food — although they do put on a superb suppper! The speaker, on the night of their Christmas break-up, was Henry 'Scotty' Scott, the brother of Brian VK5NOS, who gave an insight into his work on the Overland Telegraph lines, from just after the War (1944) to the present.

I was pleased to hear that the club has offered to do a 10 metre relay of the Sunday Morning Broadcast, in the New Year. Nominally, to begin with, the operators will be John VK5SJ and Ted VK5PEB. I would like to thank them for giving Tony VK5AH and Chris VK5UH, some much needed 'breathing space' (it doesn't allow for sickness and holidays to clash if there are only two of you on the roster). We will look forward to hearing VK5BAR on 10 metres soon.

I would like to thank Colin Taylor VK5CE, for stepping in to fill a vacancy left on the 20 metre relay team by the retirement of Arn Van Der Harst VK5XV. Arn was first licenced in 1967 and shortly afterwards was asked to do a 20 metre relay . . . he has been doing it ever since! Local interference problems have finally forced Arn to give up and, on the night of our Christmas Social I had hoped to give Arn a pen and pencil set, inscribed with his name and call sign, to thank him for his 20 years of service to the Division.

Unfortunately, Arn was unable to be with us that night but Hans Van Der Zalm VK5KHZ, our Clubs and Country Members Representative (who lives near Arn) presented it at a later date. I believe John Masters VK5AV, may also have to give up the 20 metre relay for the same reason. John has moved into the same street as Arn so now shares the same interference problem. Thank you for the four or five years which you have been doing the relay, John, and perhaps if the problem goes away we might see you back one of these days. In the meantime, this has left us with a large gap in the 20 metre team. Colin VK5CE, has said that he would do a two metre relay, but when it became obvious that 20 metres was needed more, Colin agreed to do that. Thanks Colin, for your timely help, and if there is anyone else who could also volunteer, it would be greatly appreciated.

We are still looking for a Program Organiser and a Historian, as I have regretfully accepted the resignation of Ray Bennett VK5RM. Family commitments this year will prevent Ray from continuing as Historian. Thanks Ray for the time that you have put into the job. Anyone who would like to take on one of these important positions, please let me know.

December 13 saw the end of an era, when Neil White VK5WN, did his last 160 metre broadcast from the BGB. Neil has been doing this for 14 years, with only a short break last year due to ill health. You may remember that we presented Neil with a pen and pencil set last year to thank him for the 30 years, on and off, that he has been doing one job or another for the Division. We wish you a long and happy retirement, Neil.

Speaking of Broadcasts, I learned recently that the first post-War broadcasts went out under the call sign of VK5RR in 1947. A couple of weeks later the official VK5WI call sign was issued and Reg continued to put out the broadcast under this call sign. Reg is still a very active Old Timer, both on the air and at WIA meetings.

It is with regret we announce the passing of two silent keys, Danny Rogers VK5FG, who will be known to many Old Timers; and Chas Swan VK5PAN, who although he upgraded to VK5WG, was best known under the VK5PAN call sign. Chas was a very active and well-known amateur and a member of the Lower Murray ARC. We extend our synpathies to the families of both gentlemen.

DIARY DATES

Tuesday, February 23	(to be confirmed) Ray Dobson VK5DI on the latest in Micro-Technology from Philips. 7.45 pm.
Tuesday, March 22	Den Smith VK5LS on Radio Communications in WWII (Den was in the French Resistance). 7.45 pm.
Tuesday, March 29	Buy and Sell night. 7.30 pm. (no ESC, QSL Bureau, Publications, etc).

JSA AWARDS

1414	YC1IOI
1415	VK1NAS

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VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

EXPO 88 — a non-event

Our would-be involvement with the 1988 Exposition Authority began some three years or so ago. We approached the Authority as the Queensland Division of the Wireless Institute of Australia. The Authority wrote back and said that they would only consider an application from the Federal body of the WIA. We should have known then what we were up against.

So we tried again, this time with the backing of Federal Executive. We were advised of the cost of floor-space. The space needed would have run into some $25 000. This was quite out of the question. Time passed.

Then, quite out of the blue, as if we had never contacted the EXPO Authority, we received a letter asking for our help as amateur radio operators to publicise EXPO 88!

Council appointed two negotiators to deal with the Authority. They were Theo Marks VK4MU, and John Aarsse VK4QA. Theo and John met with several of the officials of EXPO and started to realise just what sort of bureaucracy they had to contend with. With the assistance of Murray Kelly VK4AOK, a professionally prepared presentation was submitted.

The intention was to have an amateur radio exhibit with an operating station. At one stage space, free of charge, was promised. More time passed, our delegates were passed from one official to another. Then we were offered some spare EXPO office space in a building just outside the EXPO site and not open to the general public. This, of course, was totally unsuitable.

The final outcome of the whole sad story was an apology from EXPO saying that they would like to give us space on the EXPO site but it was then (November 1987) too late to shuffle things around to fit us in. We are of the opinion that we would not have been $15 000 too late, even at that stage.

So there will be no AX4XPO operating from EXPO 88, but we have applied for and received that call sign and it will be used on the air from April until the end of October. The EXPO Authority have, at least, given us 50 000 QSL cards, a large percentage of which will be used for the special call sign.

Even though the result was a very negative one, the Queensland Council, on behalf of the members, must thank Theo, John and Murray for the tremendous efforts that were made, alas in vain, to put amateur radio before the visitors to EXPO 88.

Bud Pounsett VK4QY

ar

QRM from VK7!

John Rogers VK7JK
VK7 BROADCAST OFFICER
1 Darville Court, Blackman's Bay, Hobart, Tas. 7052

The will be meetings of the WIA during February as follows:

Penguin — February 9, at 8 pm, Penguin High School
Launceston — February 12, at 7.30 pm, at the Maritime College
Hobart — February 3, at 8.15 pm, at the Activities Centre, 105 Newtown Road, Hobart.

At each of these meetings one of the important topics will be that of the Divisional AGM to be held at Rutherglen, Hadspen, on Saturday, March 19, at 1400 hours.

All notices of motion for that meeting must be in the hands of the Secretary by February 19.

All nominations for Divisional Council must be in by February 26, and all eight positions are being vacated. Please send nominations and notices of motion to:

The Divisional Secretary
PO Box 1010
Launceston, Tas. 7250.

This meeting has been publicised on the weekly broadcasts in VK7, as well as here in AR, so don't complain if either you are not represented at Divisional level, or you have WIA problems not being sorted out — you have had plenty of time to take action!

A General meeting will follow the AGM, and one important item to be considered is the re-writing of the Articles of Association, in view of the changed circumstances of the Division. Council has decided to separate these meetings from the TARC and annual dinner — see later notes — and to centralise the location to attract more members to the meeting.

Members should make their own arrangements for meals available at Rutherglen, and site facilities will be available for members' families.

The Tasmanian Amateur Radio Convention (TARC) will be held this year in the Hobart area, and the host branch has determined that it is to be run in conjunction with the Tasmania Day festivities in November 1988. TARC will be organised at one or more venues, to be self-funding as far as possible, and to serve both as a contributor to the community events of the Bicentennial celebration and the Tasmania Day Festival. Its publicity must naturally provide a means of highlighting the hobby of amateur radio. A committee is to be established at the Southern Branch AGM to provide a planning brief for the March meeting. Peter VK7ZPK, leads the group for TARC operations, and looks for strong support from amateurs — and others — in the south during the coming months.

A new broadcast roster is coming out this month and the frequency of participation has now improved to approximately one in two months. The Broadcast Officer is appreciative of the support he is now receiving from over 30 amateur operators in VK7, and especially so of the regular participation of several who "come up" every week, rain or shine, to provide additional relays. We are always searching for ways to improve the presentation of our broadcasts, to include interviews, tapes and live "OB" inserts. In addition, the arrival of AMTOR, under the auspices of Lew VK7LJ, and his offsider, VK7XD, plus the packet system set up by Andre VK7AE, will certainly have a beneficial effect on the actual news-gathering. John VK7JK, is always awaiting ideas and constructive criticism, but, even more, he looks for participation, if only from time to time.

At the time of writing, the Westcoaster (Melbourne to Hobart) Yacht Race was well under way, and 18 amateur operators were involved in the radiocommunications systems for that race. Based at the Derwent Sailing Squadron in Hobart, the equipment included computer graphics and FAX facilities, and the media could be provided with a printout of relative positions, handicap positions, distance-to-travel and other details of all the 44 boats within three or four minutes of the end of a sched. A great deal of preparatory work went into the system, and the results proved very satisfactory to all those concerned with the race.

73, John VK7JK

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SC-9 VINYL CASE Was $29 **Now $10**

CUSTOMERS NOTE: We are now taking bookings for buses from Melbourne & Brisbane for the Gosford Field Day, February 21, 1988. Book now to avoid disappointment.

CORRESPONDENCE
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2000

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Ph: (07) 394 2555
FAX: (07) 394 4316

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher

Over to You!

OUR MAGAZINE

Regarding our magazine, I enjoy it as it is and would not like to see it turned into an American-style "glossy" with large headings and waste space, in which one can't find the articles for the ads.

Yours sincerely,
M J Young VK3PKV
69 Kangaroo Ground Road
Warrandyte, Vic. 3113

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* * *

AND MORE YET

I do not wish to monopolise this column, but feel that some further comments are very necessary.

In my letter (December AR), I said I was surprised by the (apparent) intolerance shown by various groups within the amateur fraternity. (In this context, I feel that Arthur Oliver's letter, in the same issue, is very relevant. And, in passing, congratulations and thanks for a fine job with the net, Arthur, my sympathies re the problems).

I was even more surprised by the amount of comment I received by various means, some in agreement, some in strong disagreement with my views. This, I feel, is healthy and encouraging. What wasn't so encouraging was some (admittedly not many) snide remarks and personal abuse I received for daring to criticise the WIA and "winge" about the fees.

Which brings me to the second point, and that is that it seems my original letter was largely misinterpreted and taken as (yet another) criticism of the WIA.

This was not my intention, (unless one interprets criticism of suggestions made in readers' letters as a criticism of the WIA). I am only too well aware of the time expended by officers of the WIA, and appreciate their efforts.

However, I would hate to think that the WIA had become such a sacred cow that it was above all criticism or comment.

Should that day ever arrive, then it really will be time to give the game away!

Once again, good luck, and my subs enclosed (for one more year, at any rate!).

Dmitri Perno VK4BDP
110 Panorama Drive
Nambour, Qld. 4560

Agreement and/or disagreement is everyone's right. Snide remarks and personal abuse have no place in intelligent discussion and only demean their users. We who attempt to keep the WIA in operation welcome all comment and criticism. It shows you care! —Ed.

ar

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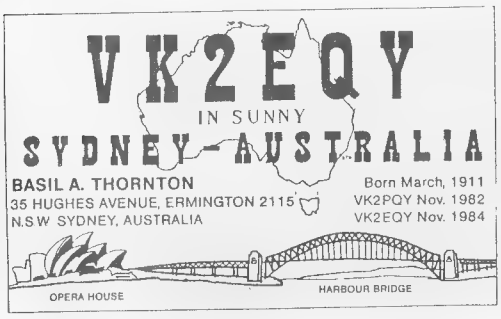
HOW TO SAY AND WHEN TO SAY IT

The *How's DX?* on page 40 of December's issue has prompted me to write that I am sure there are many readers like myself, who would appreciate articles similar to it.



It was not much effort for me, at the age of 72, to study for a novice exam and buy the required number of black boxes to get on air; but when it came to opening my mouth to talk into the microphone, I was completely lost.

Everyone I heard seemed to know what to say, and how and when to say it. How to go about operating DX was simply impossible, and there must be many new amateurs coming into our hobby facing that problem.

73 from
Basil Thornton VK2EQY
35 Hughes Avenue
Ermington, NSW. 2115

ar

* * *

PACKET EFFICIENCY

Referring to Arthur Oliver's letter in December AR, I am a long time fan of the *Travellers Net* and in particular the present net controller. I have never needed it for travel assistance but it is a classic example of the knowledge and expertise in radio communication which can be acquired by amateurs with a 'hands on' experience of the medium. Such expertise will never be attained by pseudo experts in 'modern' technique whose main preoccupation is 'one upmanship'!

Arthur's good manners and gentlemanly characteristics showed in that letter as they do on-air. I am not the dedicated gentleman that he is and therefore feel free to take issue with those anonymous 'Packet' buffs competing with the Russian 'woodpecker' on 20 metres.

First, a few facts to dispel the mythical aura that is building up around 'Packet' and the like:

- Packet message switching is not an amateur invention.
- AMTOR is not an amateur invention.

Both have been known for many years in professional circles and have been recently 'discovered' by amateurs looking for uses for their toy computers. Yet, hardware solutions are possible and probably better.

The main difference between ordinary machine telegraphy and so called 'data communication' is in the acceptable error rates. Acceptable error rates on HF circuits are

Ordinary uncorrected teleprinter — 1 in 10^3 characters

ARQ error correction systems — 1 in 10^4 characters

Data error standard for circuits conditioned for 600, 1200 and 2400 bits per second is one in 10^5 bits.

The amateur HF bands are not conditioned for that error rate. High speed packet switched data communication attempted on the amateur HF bands is plagued with retries because of the high probability of bit corruption. The retries are responsible for excessive channel occupancy. One wonders what would result if a couple of unattended subscriber computers were deliberately or inadvertently loaded with corrupted packets; maybe that is the way to 'blast them off the air' Art!

One other aspect of Packet worth noting — an AX25 frame is 152 bits minimum, comprising:
Leading flag (8 bits) + destination call (56 bits) + source call (56 bits) + control field (8 bits) + frame check (16 bits) + trailing flag (8 bits).

And, that is without any digipeater addresses and etc. Add the standard 20 character message (160 bits) and the answer is 312 bits at least. One corrupt bit is that initiates a retry, therefore on HF the bit tally per character could be 16N where N is the number of retries. Compare that with — uncorrupted Baudot five bits per character, ARQ Moore code seven bits per character and ASCII with a parity bit, eight bits per character. It seems to me that attempting packet on HF is a waste of time and spectrum space. Will someone please tell me why it is becoming popular (?) on the HF bands? Also, why it is allowed to compete with and perhaps displace such a useful service as the 'Travellers Net'?

Yours sincerely,
Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance, Vic. 3909

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QUO VADIS

It behoves **all** radio amateurs throughout Australia to read in depth (and re-read) the aptly titles "Quo Vadis", AR 10/87, p3, by George VK1GB. A telling message, it concerns us, irrespective of age, sex, nationality, financial circumstances or license level.

Too few of us digest in total each AR magazine, rarely listen to news broadcasts, and probably never study the annual balance sheets. Thus we become somewhat isolated from the complex ramifications of the WIA's ongoing efforts at State, National and International levels, which are solely for the benefit of you and me.

Our annual WIA fee syndrome is overplayed by many — it is less than ONE coffee per week at any snack bar.

Financial viability in the 80s can only be maintained by pooling resources, eg Industry, Commerce, Legal and Medical professions, Churches etc. VK1GB's suggestion of combining AR and ARA magazines is worthy of consideration.

Let us all ponder broadly and without bias, uninhibited by axe grinding, on the issue of the WIA and a united amateur fraternity in this country. These two factors will ensure the preservation of our national autonomy, which should not be taken for granted. There is little resemblance between our comparative freedom, and that of much of the present world.

Today change on a global scale is rampant — we will achieve much, if change which poses detriment to our hobby, can be minimised. Even more so, if changes advantageous to the majority of us can be implemented.

This will only be possible if we all stand united behind our official representative body, our mouthpiece in contentious issues.

Reg Glanville VK2ELG
63 Buffalo Crescent
Thurgoona, NSW. 2640

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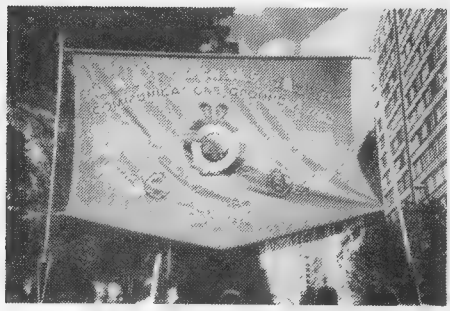
REUNION

I was very interested to read Noel Able's letter in October 1987 AR regarding proposed signals reunions, and would like it known to Noel, and any other interested ex-RAAF signals personnel, that every ANZAC day in Sydney, the ex-signals group have been marching, and holding a reunion afterwards, since 1946. In this time, many have passed on, and some have never contacted the group. Most amateurs that were in the RAAF signals, and who were, or have become amateurs since the war, have kept in constant contact since those early times. Many, of course, on discharge went back to former occupations, and have not taken part in radio activities. The Sydney group represents all ranks, and most of them went through W/T Air courses at Point Cook.

The accompanying photograph is of the Signals banner at the commencement of the Sydney march in 1987.

The 1988 Bicentennial year reunion is bound to be a big one in VK2. Why not come along?



The Secretary of the NSW ex-RAAF Signal Group is: John Williams, 3 Beane Street West, Gosford, NSW. 2250.
Pete Alexander VK2PA
(Ex-W/T Air/WOM Course 50A 1941, HF/DF Course 43 1943)
"Nandari"
Rollands Plains
via Telegraph Point, NSW. 2441

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CARRIER PIGEON?

The accompanying photograph was taken in October 1987.

Yes! It is "fair dinkum". This Homing Pigeon lost his way one windy weekend and landed right into my shack and settled in the position photographed. Perhaps he came for a recharge or a DF bearing, who knows? I thought it very unusual as he stayed around the vicinity of the shack for several days before finally taking off about two weeks later.

An illustration of the old and new ways to communicate.

Best regards,
Pete Alexander VK2PA
"Nandari"
Rollands Plains
via Telegraph Point, NSW. 2441

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SCOUT JAMBOREE ON THE AIR (JOTA) — 1987

Canberra Branch members of the RNARS again established official Scout Station VK1BP in the grounds of Government House, Canberra for the 1987 Scout Jamboree on the Air.

The official opening address for JOTA, on Saturday October 17, 1987, was made by HE Sir James Rowland and broadcast on the Scout frequencies 7.090, 14.190 and 21.190 MHz at 0400 UTC.

Operators at VK1BP were Jim VK1JL, Jack VK1FM and Jock VK1LF.

Excellent results were obtained to all States with reports of Q5 S8/9 and the VIPs present were very pleased with the results.

On the Thursday and Friday prior to JOTA, the RNARS team were busy erecting antennas for the 40, 20 and 15 metre bands. Extensive testing of the equipment was done on Friday October 16, and reports of reception on the Scout frequencies was acknowledged.

The antennas erected were a 40 metre dipole; 20 metre two-wire beam; and 15 metre dipole.

VK1LF operated his Uniden 2020 on 40 metres with 100 watts PEP output and had 16 call-backs from Scout and Guide stations in VKs 2, 3, 4, 5 and 7, which was pleasing to Sir James who kindly responded to their calls.

Both Jim and Jack had good results on 20 and 15 metres, respectively.

Despite the local weather conditions, which were overcast with thunderstorms in the vicinity and much QRN, the good efforts of the Canberra RNARS team at JOTA were commendable.
Jock Fisher VK1LF
RNARS No 308
Assistant Operator VK1BP
PO Box 94
Lyons, ACT. 2606

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SAFETY AROUND THE SHACK

Many thanks to the readers who wrote and pointed out the error in the September article.

The paragraph on page 10 which begins "It must be remembered that you no longer have an Earth wire from your Distribution Board. . ." is false and should be deleted. Naturally the safety of your existing Earth wire will continue to exist and provide the safety for which it is intended. The writer apologies to anyone who was misled or had concern for this statement which was referenced to UK regulations which are not appropriate here in Australia.

Kindest regards.
Sincerely
David A Pilley VK2AYD
15 Forest Glen Crescent
Belrose, NSW. 2085

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TEA AND SCONES?

I would like to comment on remarks made by Colin MacKinnon VK2DYM, in *Over to You!* page 61, November AR.

He asked the question "Do we need a *Women's Weekly* type column to learn thah Ethyl and Harriet entertained 12 other old buddies to tea and scones?" (He did then say "Wow — that will get some affirmative action!" Ed).

As there is only one column in AR which looks at things from a feminine point of view I must conclude that he refers to the ALARA Column. (I think you're right, Joy! Ed).

If the gentleman? ? ever bothered to read the ALARA Column, which is very doubtful, I think he would find that it pertains mainly too the activities of women in amateur radio, and ALARA members in particular. Tea is mentioned rarely, and scones even less. Many men read and enjoy our column, and much of the material received is contributed by men.

For your enlightenment, Sir, women are active in every field of amateur radio, and enthusiastically their numbers are growing steadily. ALARA is a strong organisation, and not, as you imply, a bunch of silly old women sitting around drinking tea. Our members ages range from 16 (yes, 16) to 89, and one thing we have in common is the enjoyment of our hobby — amateur radio.

It is all too easy to criticise the efforts of others, but unless your criticism is constructive, it is of little value.

Your sarcastic and derogatory remarks cast a slur, not only on myself, but on ALARA, the group of people I represent in the pages of AR.

I think, Mr MacKinnon, you owe ALARA an apology.
Joy Collis VK2EBX
Publicity Officer
ALARA
PO Box 22
Yeoval, NSW. 2868

Yes, he got some affirmative action for sure! Please accept our apology on Colin's behalf. He has done, and is continuing to do a great deal of work for AR and the WIA. I am sure his tongue was in his cheek, and a grin on his face, as he wrote the offending words. —Ed.

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SIMPLICITY, PLEASE

Having waded through the article "The More Things Change, The More They Stay The Same" by John Anderson VK5ZFO, in the October issue of AR, I am puzzled as to the author's purpose.

If it was to propose a future course for amateur radio, I feel that the coverage of such matters as the history of the hobby, the philosophies of admninistration, organisation, examination and regulation, and even the proposals for new licensing and examination systems, was unduly elaborate and detailed.

Long involvement with presenting ideas to large groups has taught me that a proposal must be concise and clearly put if it is to be understood and supported by a majority. Circumstances leading to the proposal should be known by most of those concerned, so that the germ of the idea is all that is required. The individual can elaborate on this, or inquire further if greater detail is sought.

I suggest that the issues raised must be considered and determined sequentially. Of these, the first must be the nature and types of licensing deemed necessary to meet the current and perceived future requirements of the hobby, given present trends and technology. Subsequently, associated examination, regulation and administration systems may be evolved. To attempt these any earlier is non-productive.

This was why, in a previous letter (*Over to You!*, September 1987), I confined my suggestions to a new licensing system consisting of a basic Communicator's licence, with subsequent endorsements for additional privileges as relevant expertise was demonstrated. VK5ZFO seems to have essentially supported this concept.

I hope that when the Institute's committee studying this subject produces its findings, it will be a basic, simple proposal, unlike the elaboration of the above article.

Yours faithfully
S V Ellis VK2DDL
98 Holmes Street
Kingsford, NSW. 2032

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NEED FOR PERSUASION

I think we WIA members, and non-members if they happen to read this, owe George VK1GB, a great deal for his "crie de coeur" in the October edition of AR, "Quo Vadis". If we are honest we will have recognised ourself many times in the article, for it is undoubtedly true. However, I feel that within the confines of our Institute, it is a case of the converted preaching to each other.

It seems to me that we of the WIA have to carry our crusade to those operators — the "something for nothing" brigade — who for whatever reason are not in our ranks. This issue has all the elements of the perennial argument about compulsory unionism, and has no simple answer, otherwise I am sure better brains than mine would have found one. Nevertheless, I, for one, will be asking my future on-air contacts if they are WIA members. If not, I will try persuasion to get them to join. Apart from the points raised by George, I will be using the example of what is happening in another amateur sphere which is being "heavied" by commercial interests, to wit, club flying/general aviation.

Hardly a week goes by in Europe, UK and USA but some new regulation restricts the rights, zones, airspace amateurs can use. Soon they will be able to use but a fraction of the space they used to, and for that they can thank fragmented associations of interest (food and drink to the bureaucrats) and commercial interests wanting more in a way Oliver Twist never dreamed of. The analogy is real, it is urgent and if we collectively fail, we shall be able to

beef about it to one another on our cellular phone.
Bicentennially yours
Alan Smith VK2BHF
10 Banool Avenue
St Ives, NSW. 2075

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CHATHAM ISLANDS

On a recent holiday east to New Zealand, I enjoyed the North Island and satisfied my curiosity re the Chatham Isles — 800 kilometres further east. They have been settled for nearly 200 years but have a minimum of modern institutions. There is no television or FM, but a delightful HF link to the mainland that includes a 2182 watch and a standby 500 kHz rig for maritime search and rescue. Operators do spells from the mainland in maintaining and operating links. The HF service is via two Rediffusion 1 kW units — 18 years and still mint. They cram two phone and three telex channels into their 6 kHz. The rigs are run very conservatively at 370 watts. The screen current of the four output pentodes barely registers. With one boat a month and a plane each seven to 10 days, conservation is a fact of life on the isles.

The island had one local amateur — well 19 years residence — Bob Hyndmens ZL7AA. After a short introduction on CB he passed his ticket and, from his cottage on a hillock, now enjoys his hobby nightly. A 430S via an ATR50 feeds a single coax up a 10 metre metal mast to 80 and 40 metre drooping dipoles at right angles and a 10 metre antenna with no switching! Power is from a discarded truck battery, encouraged by a trickle charger whilst on air.

All this is pretty successful as in two years he has had 9500 phone contacts, over 200 countries and I could not memorise the certificates and awards. At 79, his only regret is he didn't start earlier!

This is a different place for a DX holiday where you can take the family. I strongly advise the Lodge for accommodation — it has 900 acres and lots of isolated trees for 160 metre dipoles and Vee beams! Any spare moments can be filled in touring. Fishing is good, the crayfish are monsters. Horse riding, pig shooting and wild-fowl hunting. The weather is mild due to a strong maritime influence. There is furniture to caress tired spines whilst consuming fresh scones and coffee at 1000 — stronger fuel for the afternoon requires a 10 km journey. When inquiring please use the New Zealand Tourist Bureau — no one else knows it exists!

Happy holidays and DX
Bob McGregor VK3XZ
2 Wiltshire Drive
Somerville, Vic. 3912

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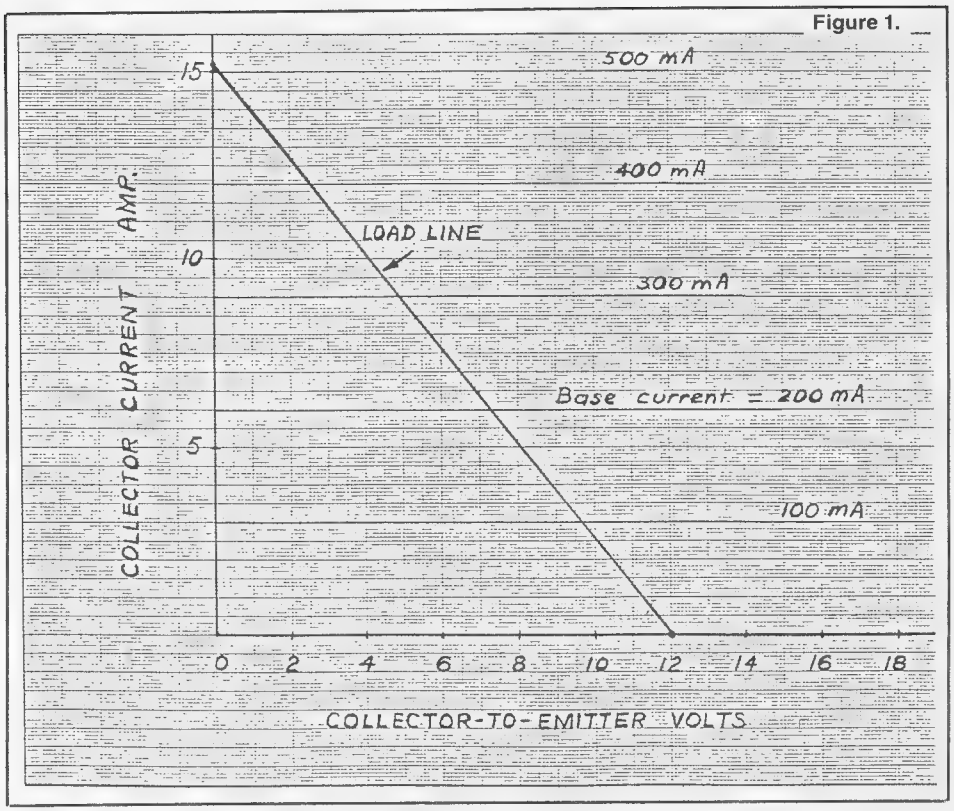
TECHNICAL CORRESPONDENCE

I wish to accept the offer by Lindsay VK3ANJ, and take issue with him over his *Topical Technicalities* published in the November issue of *Amateur Radio*. Well may he apologise to G3VA! Because of the fact that his article was featured at the front of the magazine it is necessary for responses to be printed in the magazine lest the erroneous statements contained in Lindsay's article be taken to be correct.

Firstly, the "conventional wisdom" that Lindsay is taking a shot at is, of course, established sound technical convention. Possibly Lindsay is referring to an unsound version spread by some technically handicapped persons.

I take no issue with Lindsay's statement that matching of the output stage to its design load does not follow the conjugate matching rule because of such practical reasons as efficiency of energy conversion and current and voltage limits of active devices. Perhaps this should be more widely known and Lindsay is to be commended for trying to assist. Certainly, such design approaches are part of established sound technical convention.

Figure 1.



Unfortunately, Lindsay's explanation contains some glaring errors and leaves some points unexplained. For example, Lindsay's amplifier has no losses and it could be shown to have zero output resistance! Try and match that, conjugately or otherwise!

If Lindsay had stuck with the conventional explanation he would have done much better. For example, the solution to Lindsay's equation 2 is -9.7 A by my calculations yet this negative sign is ignored. Perhaps Lindsay might like to explain this. Does this mean a negative power input Lindsay? And, what does it mean for the "DC" resistance he calculates later?

Another mistake made by Lindsay is to confuse PEP with the maximum instantaneous value of the product of voltage and current. I note that on the following page, Harold VK3AFQ, appears to have made the same error. Tsk, tsk, where were the technical editors? Well Lindsay, at least you are in good company. The PEP output of the VK3ANJ amplifier is, of course, 91.4 watts. Further explanation of this point can be obtained from the references given later.

Having pointed to errors in the article I should, in all fairness, try to give some further explanation about the matching mystery, although most electronic design texts treat this very well. I will assume that the amplifier is the same perfect device described by Lindsay but will use Figure 1, which shows the idealised characteristics curve of an amplifier transistor. The supply voltage is 12 volts and this point can be marked on Figure 1. This point represents the resting or quiescent point of the amplifier without drive. When driven, the amplifier collector voltage falls and the collector current rises. If we have 91.4 watts output then the peak collector current will need to be 15.2 amps. (This can be obtained from Lindsay's Equation 1). At this point, the collector voltage will be zero and this point is also marked on the characteristic curve. A line joining these two points is drawn. This is the locus of the collector current, collector voltage, under signal conditions. With no signal the collector current is zero and the collector voltage is 12 volts. At maximum base current drive the collector voltage is 15.2 amps and the collector voltage is zero. For intermediate base currents the collector voltage and current have values in between the extremes. This line is called the load line as the slope of the line gives the value of the load resistance seen by the transistor. This is 12/15.2 = 0.789 ohms, not the 1.57 ohms calculated by Lindsay. (Sorry Lindsay, another error!). To achieve the 91.4 watts output (CW or PEP) the 50 ohm load would have to be matched to this value, not 1.57 ohms. Lindsay has mixed a peak voltage, albeit the DC supply, with an average current this getting double the correct value.

The load resistance is not a DC resistance, it is the transformed 50 ohms of the load resistance and its value is determined by the supply volts and desired power output.

It remains to be stated that it is necessary to have two output transistors in push-pull. The collector to collector load would be 1.57 ohms but each transistor would see 0.789 ohms. If the output stage was single ended, then the peak current would need to be raised as power would be generated only every second half-cycle.

Finally, I would like to mention that the impedance seen looking into the output port of most transmitters is less than 25 ohms, even when they are designed to operate into a 50 ohm load. Thus they have an output VSWR of greater than 2:1. Signal generators are designed for testing and measurement and are designed to have output VSWRs of less than 2:1. It is a matter of horses for courses.

I hope that Lindsay is not totally discouraged as he is quite right in his assertion that the design of matching circuits for output stages is based on conversion efficiency and, of course, device limitations.

PEP REFERENCES

1 "Care and Feeding of Power Grid Tubes" Varian Eimac, 4th printing 1982, 67-30070.
2 "Novice Notes" Amateur Radio, June 1981.
3 "Novice Notes" Amateur Radio, November 1981.
4 "PEP Revisited" VK3AFW, Amateur Radio, January 1988.

Yours sincerely
Ron Cook VK3AFW
7 Dallas Avenue
Oakleigh, Vic. 3166

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TOPICAL TECHNICALITIES

Correspondence and discussion about the subject of the first *Topical Technicalities* indicates a difference between my understanding of impedance matching and that of others. The following is a summary of my understanding.

Refer to Figure 1 — the source has an open circuit volts of E volts and an internal impedance of $Z_s = R_s \pm jX_s$ ohms. To obtain maximum power transfer from source to load the source resistance R_s must equal the load resistance R and the source reactance X_s must equal the load reactance X, but the opposite kind. The load impedance is then the conjugate of the source impedance, which means there is a reciprocal relationship joining the two. The product +j by -j is unity and that is the test for reciprocals. To further study the argument, assume there is no reactance.

The power supplied is $E^2/(R_s + R)$ and if $R_s = R$ the power supplied to the load is $E^2/4R_s$ and that is the maximum possible. The efficiency however is only 50 percent. Most practical cases require maximum efficiency.

Efficiency = power out/power supplied
Power out is $E^2R/(R_s + R)^2$ and
Power supplied is $E^2/(R_s + R)$ therefore
Efficiency is $R/(R_s + R)$

It is obvious from that last expression that R needs to be larger than R_s if efficiency is to be greater than 50 percent. Putting $R = nR_s$ efficiency in $n/(n+1)$ which makes it more obvious. An example:

$R_s = 50$ ohms
$E = 100$ volts

If R is 50 the power supplied is 100 watts and the power out is 50 watts; efficiency is 50 percent.

If R is 75 ohms the power supplied is 80 watts and the power output is 48 watts; efficiency is 60 percent.

That is just a theoretical illustration. When dealing with amplifiers it is necessary to allow for the effect of loads other than the design load.

There are two terms related to impedance matching about which there are also some differences of opinion. These are:

Mismatch loss — which is the ratio of actual power out to the maximum possible. In the example above the maximum possible is 50 watts to a 50 ohm load and that supplied to a 75 ohm load from the same source is 48 watts. The 'mismatch loss" in dB is:

$$10 \log 48/50 = -0.2 \text{ dB}$$

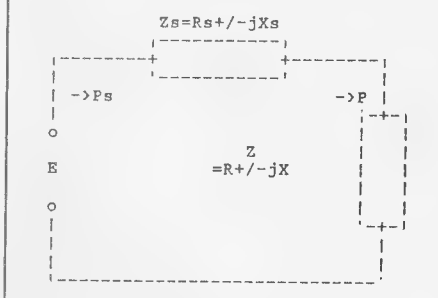
Insertion loss — is the ration of the power supplied to a load via a network between source and load to the power which would have been supplied with the load connected direct to the source. Insertion loss can include mismatch loss if the network input impedance is not the design load. If, for example, the connection from a 50 ohm source to a 75 ohm load is made by 75 ohm coax with a loss of 3 dB, the insertion loss is 3.2 dB.

All of the above is very interesting and proves that I can manipulate Ohm's Law with the best but, for practical reasons, it has a very simple explained weakness. It assumes that the source impedance and the EMF (E) does not change when the load is not the design load. There are rare circumstances when that is fact but not in solid state or valve amplifiers.

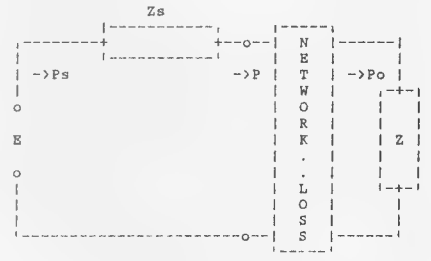
The 'moral' to that story is — "for maximum efficiency of power transfer from amplifier to aerial use a coupling network to ensure that the final is connected to its design load and at the same time ensure minimum insertion loss in the coupler and transmission line." The following illustrates the importance of low insertion loss networks.

A commercial coupler (ATU?) was recently reviewed in AR. The reviewer included in his performance analysis the claim that the tuner coil temperature increased to 85 degrees Celsius after running for one minute at 100 watts; the supplier countered that claim with one of his own; "the temperature level (of the coil) assessed by touching it with a sensitive part of the hand was not unpleasant"; that after running for 30 minutes at 200 watts. It is possible that the temperature rise was the same in both tests.

Figure 1.



a) when Z s the conjugate of Z_s P = Pmax = $E^2/4R_s$ and P/P_s = 0.5



b) Mismatch loss = P/Pmax
Insertion loss = Po/Pmax

The review article included a picture of the 'innards' of the unit and it is my guess that the coil is 50 millimetres diameter, 25 turns of one millimetre diameter wire. That amount of copper weight about 30 grams.

The specific heat of copper is 0.09 calories per gram per degree Celsius, therefore the heat energy required to raise the temperature from say 20 degrees to 85 degrees is 195 calories. One calorie is the equivalent of 4.2 Joules therefore 819 watt seconds of electrical energy is required to get that coil to 'hand warming' temperature (neglecting losses by conduction, convection and radiation). Both testers avoid telling how long it took for the coil to reach operating temperature so we cannot be accurate with an estimate of efficiency. It must be longer than one second because that would require 819 watts. Ten seconds would require 81.9 watts and 100 seconds would require 8.19 watts. Those possible losses persuade me to continue building my own couplers! My coils don't even get 'pleasantly warm' which is only natural. I hope the copper used in the coil is tinned or silver plated; at 85 degrees copper oxidises quite freely.

By the way, we are still using baluns on the output of couplers in spite of all the good advice against it. Maybe that is why the coils are blushing.

If you have to buy a coupler I suggest you get an authenticated statement of its efficiency at the loads you anticipate.

Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance, Vic. 3909

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KNIGHT IN SHINING ARMOUR

Arthur Oliver (Over to You! AR December 1987), wants to be a "Knight in Shining Armour" defending his end of the band against all-comers. Unfortunately, he really appears to be "King Canute" and is destined for the same fate, unless he soon realises that the waves of digital communications are likely to engulf his little empire.

Nothing in Arthur's letter suggests that he has made any effort to understand why this situation has come about. He seemingly fails to understand that the small segment above 14.100 MHz has necessarily come into international use so that traffic can be passed between International/National/State and Regional "gateways" for on-forwarding by local VHF/UHF nets. This is a 24-hour-a-day function and interference only delays the ultimate receipt of a packet. The assumption that these packet signals are one-on-one QSOs is generally false — such links are usually below 14.100 MHz.

Arthur seems to argue that this auto-transfer function should remain in the laboratory until catered for by some distant ITU-IARU or WIA convention!

Sadly, it appears that no one in the WIA has seen fit to counsel Arthur and his cronies about the effect of his self-appointed role on amateur radio public relations; or to brief him on the real world of digital communications.

Finally, bearing a long-standing grudge against packet, achieves nothing worthwhile. Making an effort to understand how packet works, and who is getting the worst of any international interference claims, will I hope convince Arthur to turn the big knob away from his tormentors.

73

Col Harvey VK1AU
16 Leane Street
Hughes, ACT. 2605

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GENTLEMENS DISAGREEMENTS, TRAVELLERS' NETS AND SUCH

Isn't it a shame when a small issue that could be discussed and, most likely settled, is blown way out of proportion. It never ceases to amaze me that someone with an axe to grind seems to take pleasure in causing as much chaos amongst the amateur ranks as possible. It should be obvious to all amateurs, that agreements can never completely cover all aspects of our hobby due to the diversity within it and so we must give and take a little for the good of the majority.

This all comes under the heading of the spirit of amateur radio, that is if amateurs can still remember what that is. Has the bond that has promoted goodwill and peace amongst amateurs all over the world left the hobby only to be replaced by dissatisfaction and selfishness? It is starting to look that way. I am referring to the unfortunate experiences that VK6ART and some others have had recently in reference to the Travellers' Net. I have been quietly observing the problem and now, after reading VK6ART's letter in AR, feel compelled to comment. As Arthur raises some good points in his letter, perhaps an explanation of packet activities on 20 metres is in order.

It seems to me that the reason for packet activity on the section 14.100 to 14.110 MHz is not clear to most SSB operators, and my understanding is as follows:

The unattended packet bulletin board operation's involve transferring huge amounts of traffic and information around the world on an auto-forwarding basis. These stations automatically call other stations in the network at specified time intervals and, when propagation is suitable, connect and transfer files. As the other packet bulletin board stations around the world operate on a common frequency 14.103 MHz USB, VK operations have naturally centred there. There is much general DX packet activity from Europe, Asia and North America on 14.099, 14.101, 14.105, 14.107 and 14.109 MHz also and unfortunately many packet signals can be heard in the 14.106 MHz area so therein lies the rub. The splashover from strong packet stations can be heard and provides interference to the Travellers' Net.

Now, this Travellers' Net is a pretty important part of Australian amateur radio because of the service it provides to the travelling amateur and most VK packet operators realise this too. I have called in once or twice myself in past years and appreciated the pains taken by operators to assist travellers.

Since the problem became public knowledge, I have noted changes in Australian BBS operating procedure which has been slowly brought into action, perhaps because most BBS systems work during the day and therefore were not always aware of the problem developing. These changes consist of complete programmed cessation of packet operations or a change of band for the duration of the Travellers' Net, which hopefully has stopped some QRM. Some BBSs have moved to 30 metres permanently in an effort to ease the present congestion on 20 metres.

As to the Gentlemens' Agreement, you may have noticed that, in the 1985-86 Call Book, the narrow band modes section was listed as 14.070 to 14.110 MHz but in the 1987 Call Book I have recently been told that it is now 14.070 to 14.100 MHz. In my opinion, if it is not a misprint, it was pretty bad planning by the WIA for the fastest growing mode in amateur radio today. Many amateurs seem to forget also that this Gentlemens' Agreement has not been legislated, in other words, is not law. This is why sometimes RTTY appears in the CW section and also why SSTV and FAX frequencies are in the SSB portions. Of course, another reason is different allocations in different countries. Remember the non-interference basis of amateur operations works both ways. DOTC would need something more substantial in relation to packet before action could be taken as some amateurs have suggested. The chances of prosecution arising due to failure to check if the frequency is clear is unlikely as most of the equipment used in Australia will not transmit if a signal is detected, even the woodpecker or electrical noise will prevent it at times. Above all, one must remember that DOTC have approved unattended operations provided a watchdog timer is fitted so the rest is purely fanciful thinking. The other point of importance is that, as observations have shown, little interference is now being caused by VK stations anyway and DOTC can do little to cure the overseas QRM.

Amateur radio is supposed to be a hobby that combines friendship, respect, generosity, education and tolerance so let us start practising what we preach and all work together for the betterment and protection of our hobby in the years to come.

de

Peter McAdam VK2EVB
PO Box 433
Coffs Harbour, NSW. 2450

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MEMBERSHIP

I write again further to my letter in AR, September 1987, "Membership — A Marketing Approach". And to the letters by Colin MacKinnon VK2DYM and Dmitri Perno VK4BDP, who both made comment about the marketing approach that I suggested.

When I wrote my first letter it was worded deliberately in an attempt to try and draw a little blood. At the very least, to provoke some lively discussion on the points made.

Blow me down! It hardly caused a ripple. I didn't even see mention of it in another magazine where I expected it to be picked up as a beginning of a controversy.

Those comments that I wrote were not meant to be, or to draw unconstructive comments from the fraternity, but rather constructive discussion on the ideas put forward.

I noted that Colin VK2DYM agreed with my thoughts, but Dmitri VK4BDP was not too sure about my intentions.

Let me then clarify a few points. To adopt marketing techniques does not imply going up-market. The term going up-market is used to describe where you are going to place your product or service.

To take the other extreme, an organisation can elect to down-market its product. That does not mean that it not utilising marketing as a strategic management tool or system.

As regards the morality of selling something to people who did not even know they wanted it, if you consider that we usually become aware of products and services through some sort of promotional campaign. If equipment manufacturers did not promote their new products, then we would only slowly, or never, learn about new products and developments in communications equipment.

Marketing is not a flash term for unscrupulous selling. Marketing is a form of management adopting one common premise: ie marketing decisions always begin with the consumer.

If we extend this theory, it follows that the WIA should find out what its customers, both existing and potential (non-members) want.

It is that simple! ! !

When this simple piece of information is discovered, it then only has to be made commercial reality.

The other alternatives are many, I guess.

Perhaps restrict WIA privileges and services to members only: eg restrict repeater-use to members only, fight for band space for members only, etc.

Another school of thought is to start another body in addition, or opposition to the WIA.

If this thought has crossed anybody's mind before, and I have heard it rumoured, then let me warn the protagonists with an example from the aviation industry.

I am a member of the Aircraft Owners and Pilots Association. This body largely represents the interests of the private/business pilot, and aircraft owner.

There are many other aviation organisations as well: eg General Aviation Association, Helicopter Association of Australia, Australian Federation of Airline Pilots, Gliding Federation of Australia, Royal Federation of Air Clubs of Australia, Regional Airlines Association of Australia, etc, etc.

The problem is that, at times, all these organisations will make separate approaches to the Federal Government on the same issue with differing views. Various factional approaches have at times been frustrated.

This problem has led Government to ask the industry to try and represent itself under one umbrella organisation so that the Government can negotiate with one body.

We amateurs have a big advantage in this area, in having one unified body to approach DOTC.

I can assure you the DOTC would not take kindly in the long term to having to try unraveling the conflicting views of two, or more, organisations representing our hobby.

We need to get more members, we need a clear majority, ideally, of all licensed amateurs. There must be a way of doing this. If marketing works for organisations from small firms right through to the BHPs of this world, I think we need a very convincing argument as to why the WIA should not adopt similar strategies.

This does not mean we have to go trendy with "Flashing Lights", or anything else that would detract from the hobby. But it does mean we must not look inwardly at ourself, but outwardly at the rest of the non-member fraternity.

The only way to do this is to seek out non-members' views. This needs to be a well orchestrated attempt, not a half-baked questionnaire designed only to skim the surface.

It will cost money, it will also need expertise — expertise that I called for in my first letter, but to no avail!

I would be more than happy to discuss this matter with any amateur, the Federal or State Council members or anybody who is at all interested.

We will see how many takers I get this time.

73

Bruce R Kendall VK3WL
8 Walwa Place
Werribee, Vic. 3030

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Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write ***each*** on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper. Please do not place a WANTED and FOR SALE item on the one sheet of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Copy is required by the Deadline as indicated on page 1 of each issue.

MORSEWORD 12 SOLUTION

Across: 1 enemy 2 sued 3 waste 4 bead 5 left 6 manes 7 marg 8 pix 9 this 10 Sion

Down: 1 vac 2 cod 3 feel 4 hats 5 kites 6 gilt 7 tusk 8 await 9 kilt 10 tired

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Obituaries

JAMES WILLIAM PORTER VK2AXP

Jim Porter died on November 19, while mowing his front lawn Earlier in the day he had a medical check up which had pronounced him fit and well. Jim was 74 years of age.

Jim obtained his AOCP and the full call sign VK2AXP after World War II, and continued to operate continuously since then. He had served in the Army during the War and decided to take up the hobby after discharge. Jim operated his station from the same address in Caringbah for approximately 37 years prior to his death.

I first made his acquaintance in the early 1950s in regard to a matter pertaining to amateur radio, and we remained firm friends ever since. From that time I had a real friend in a man who was one of the world's unassuming and sincere people and whose integrity was boundless. I feel that I was privileged to maintain this friendship for so long with one who was one of "nature's gentlemen".

Jim Porter was always a keen radio amateur and a longtime member of the WIA and was an example of the dedicated hobbyist who takes a great interest in his hobby.

To his wife, Nancy, condolences, which is shared by his amateur friends.

Vale — James William Porter, a fine man, good friend, and a loss to the amateur ranks.

Contributed by Ben Mills VK2AJE

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WILLIAM (Bill) NEVILLE ROBERTS VK2DMM

It is sad to report the passing of Bill at Newcastle, on November 5, 1987 aged 68 years. He was recovering in Newcastle Hospital but succumbed to a thrombosis.

Bill had held an amateur licence for a number of years, but prior to becoming an amateur was the holder of a PMG commercial licence, which he gained in the 1940s whilst he was a member of the NSW Police Force. He was a Radio Technical Officer in the Police Force and played a significant part in the improvements to the mobile two-way radio and related systems. Later Bill joined Ampol Petroleum and became an executive officer in the State of Victoria.

Following his retirement in 1975, Bill and his wife, Nance, travelled extensively by caravan, becoming well-known to those frequenting the Travellers Net.

Bill was an active amateur and took a keen interest in all that flashed across the ether waves.

To Nance, his widow, and his family, we extend our deepest sympathy.

Contributed by Norbert Scott VK2QS
Fred Meyer VK2AAX
John Howard VK2AMH

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HAROLD GRIFFITHS DICKS VK6QD 1915 — 1987

Dr Harold Dicks, AM, MB, BS, passed away at his home in Brentwood on October 10, 1987.

During the period of World War II he was resident in the Pilbara region of Western Australia as a doctor, pilot and aircraft maintenance engineer for the West Australian section of the Australian Aerial Medical Service, operating from Port Hedland. The aircraft at that time was a single-engine Fox Moth. At the same time he was District Medical Officer, Magistrate, Mining Warden and Protector of Natives, in the Pilbara, for the Commonwealth Government of the day. He also held the rank of Captain and later Major in the AMF.

The late Harold Dicks VK6QD, in the "shack" of his yacht *Seaflight*.

In 1956, while still continuing an active role as a flying doctor, he became President of the Service which was to be renamed the Royal Flying Doctor Service of Australia (Western Australian Section), a position he held for 20 years. During this period, he also held the office of Operations Manager and served two two-year periods as Federal President of the RFDS.

As Executive Director (1968-1978) he was heavily involved in the procurement and ferrying of aircraft from the USA to VK6. Through amateur radio it was possible to check his progress after landing at each stop. In all, 12 aircraft were ferried; 10 across the Pacific Ocean and two via the Atlantic Ocean and Europe.

In 1977, as a memorial to his late wife, he founded the Robin and Harold Dicks Memorial Foundation, which is administered by the RFDS (WA Section) to train nursing personnel to commercial pilot standard, so as to perpetuate the care of the sick and injured in remote areas using aircraft as transport.

On January 26, 1978, Harold was made a Member of the Order of Australia for services to medicine and the RFDS. During this year, using his own private aircraft, he established a weekly clinic and surgery in the remote locality of Dongarra. He had previously conducted similar services for the township of Ravensthorpe and the Murchison communities.

Over the years he had been actively engaged in medical work the field, training pilots, setting up maintenance facilities, procurement of hangars, administration, fund raising, negotiation with various business companies and adviser to both Federal and State Governments. On the medical side, he was involved with the design of stretcher installation and standardisation for various aircraft and ambulances. Medical equipment purchased and carried included the first Bird respirators used in RFDS aircraft.

Although medical services took much of his time, Harold was a true family man. They frequently sailed to Rottnest Island for brief holiday periods. It was during these little excursions on his yacht *Seaflight* that Harold and his wife Patricia VK6QL, could be heard in radio communication with their friends across Australia. They also had two metre equipment on board and in both of their cars. At the time of his passing he was considering the construction of a lightweight aircraft.

On behalf of their many friends we extend our sincere condolences to his wife Patricia, daughter Robin aged nine, and son David aged six years. As was stated by the VK6 WIA President, VK6OO, "It was a privilege for amateur radio to have been associated with Dr Harold Dicks — the founder of the RFDS in Western Australia."

—Compiled by David Couch VK6WT, from information supplied by VK6FR and VK6FH, at the request of VK6QL

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COL FLETCHER VK2ASF

It is sad to report that Col VK2ASF is a Silent Key. The only CW that ever rivaled VK3s VHP and VIS in strength, clarity and perfection; the only CW that would be working Gs, XEs and Europe on 7 MHz while the rest tried hopefully for a JA. Others like VK2s DO, JR, QL, WH, and ADB were as perfect, but never so strong.

When a little audio was added by some unearthly disposals conglomeration to the carrier running maximum authorised power from a pair of 813s — there never could be such a friendly voice welcoming any visitor to the south coast, assuring all that the signal was coming from three full wave lengths of wire connected by matching stubs for correct phasing. At times the signal was said to come from several miles of fence wire keeping sheep from cattle. The height of the fence was never given, but the three full waves in phase varied with the cloud base. One night I remember the signal was deafening through headphones plugged into a one-valve regenerative receiver. Col claimed there were two horses tangled in his matching stubs, effectively increasing the ERP (and HP?).

We only met three times in 30 years, but spoke every day for over 20 years. Every amateur who used 40 metres in the 50s knew Col.

His mobile would have been eagerly bought by any museum today. The remains of three jeeps lashed together with fencing wire sporting a few sections of a tank whip and improbably bearing a registration number plate! Except for an on/off switch and a carbon microphone, there was nothing else to suggest amateur radio. Col would drive about in this with gleeful R5 S9 signals, attending to his timber yard business, or later his television trade.

Visitors to Mailing Street could rely on a gift of large fish, freshly caught by Col. His fish stories inevitably ended with the need to find an axe to remove a few portions for Jean to cook. His maritime mobile was beset with corrosion and never equaled base or jeep.

Always generous and helpful to a newly licensed beginner, Col shipped his old AT5 rig to me about 1960. The VFO was gradually steadied, and a good signal at last came from VK2AXK. The last few years I have only been on two metres so have been unable to contact Col.

Contributed by Lee Kinsella VK2AXK

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GORDON HARLEY VK4GH

Gordon passed away quietly at Fairhaven Aged Christains' Home, Maryborough, on October 3, 1986, after a slow deterioration of health over a period of several years.

As a newly licensed amateur in 1928,

Gordon was living with his parents in Ipswich and was quite often seen scaling 60 feet oregon masts to adjust ailing aerials, much to the alarm of a nearby tennis club.

Prior to the war, Gordon was a member of the Militia Signals and when hostilities began, he joined the Army Signal Corps, serving in Brisbane and North Queensland. By the war's end, he had risen to the rank of Captain.

After the war, Gordon resumed activities as an amateur and maintained an active interest in all matters relating to radio communications. Right up to the end of his life, he gladly helped any person with a genuine interest in becoming an amateur radio operator and was responsible for many locals achieving that status, among them Col Paton VK4BCP and myself.

Gordon was one of the early members of the now defunct Wide Bay Branch of the WIA in Queensland. His main area of operations was HF, and being a real Old Timer, all of his equipment was home-brew right up to April 9, 1975, when his three sons presented him with a transceiver and beam. In later years, he was often the only person to be heard around Maryborough on VHF during working hours providing assistance and greeting to mobiles passing through town.

A teaching career for Gordon began in Ipswich, continued on to Didcot, and finally to Maryborough where he eventually retired. Of course, thousands of children passed through Gordon's hands over the years and much to Gordon's quiet pride, many ex-pupils showed their appreciation of his efforts at the Centenary of the Albert State School, Maryborough, a few years ago.

No father could be prouder than Gordon was of his sons. Eric, the eldest, is a surveyor in Western Australia; Ian, has high scholastic achievements and currently lectures in Surveying at a university in England; and Geoff, the youngest, is a solicitor and partner in a large law form in Brisbane.

An active interest in music kept Gordon busy in various choirs and the local Eisteddfod. In the days before Emphysema took its toll, he had a strong, deep singing voice that almost made it unwise to sit in front of him in church.

Unfortunately, Gordon's wife, Win, predeceased him by more than a few years. Consequently, amateur radio assumed an important part of his life and he used it to maintain a large circle of old and new friends around the world.

In July 1986, Gordon was made the first life member of the Maryborough Amateur Radio Club. He is sadly missed by his many friends.

Contributed by Wade Millwood VK4ACB
ar

* * *

BERNARD (Bernie) STANLEY ROGERS VK5FG

Born in 1912 at Port Broughton, Bernie started his career with the then Post Master General's Department as a Telegraph Boy and retired as a Supervising Telegraph Traffic Officer in the Adelaide Operating Room.

His interest in amateur radio began as a lad whilst a member of the Balakalava Crystal Set Club. As his interest grew he graduated to being the proud owner of a small home-brew set which he situated in a small room adjacent to the kitchen of the then stylish Balakalava Coffee Palace. It was from here that his first CW contacts were made, much to the amazement of family and friends. He gained his licence on March 24, 1934.

Operating in the CW mode, Bernie made countless friends and contacts world-wide, and also filled the role of CW examiner at times for a number of years. He also operated SSB and keenly promoted the hobby of amateur radio to those genuinely interested. Bernie's key became silent on December 8, 1987, and he will be sadly missed by family and friends, including those who knew him as a true gentleman of the air.

Contributed by T B Rogers VK5BTR
ar

Silent Keys

It is with deep regret we record the passing of:

MR G CAMPBELL	VK2ZQC
MR H G DICKS	VK6QD
MR COL FLETCHER	VK2ASF
MR DAVID KING	VK2NHL/ZAA
MR HAROLD H LACK	L40357
MR PHIL LEVENSPIEL	VK2TX
MR LEO S MEYERS	VK2KS
MR BERNIE S ROGERS	VK5FG
MR J TREMBATH	VK5JT

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DEADLINE

All copy for inclusion in the **April 1988** issue of *Amateur Radio*, including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162,** at the latest, by **9 am, February 22, 1988.**

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write ***each*** on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
$22.50 for four lines, plus $2.00 per line (or part thereof)
Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office please . . . 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

COMPONENTS: Wide range of parts for receiver, transmitter and other electronic equipment. Semiconductors, valve, plate bypass capacitors, coaxial connectors and many more. Mail inquiries welcome. Sorry, no catalogue available. D Dauner Electronic Sales, 51 Georges Crescent, Georges Hall, NSW. 2198. Telephone: (02) 724 6982.

WANTED — ACT

INFORMATION & PHOTOCOPIES/CIRCUIT DIAGRAMS: for Swan power supply, model PSU-5. Copy of Scripsit Word Processor Program & documentation for TRSDOS Model 1 system. Ph: Richard (062) 58 1228 or write to VK1UE QTHR.

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — NSW

AR7 COMMUNICATIONS RECEIVER: original condition. Ph: (02) 525 5559.

DRAKE 3300 LP FILTER: VK2QT, QTHR. Ph: (048) 71 1018.

FT-7B TRANSCEIVER: no mods. Ph: Joan VK2AKW, Ph: (02) 632 6746 please.

OLD SLAVE CLOCKS: of the type that were driven off master clocks in the head offices of factories & government buildings of yesterday. Slave units were stepped on by a pulse every 30 seconds. Ray VK2FW. Ph: (063) 65 3410.

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in

the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — VIC

FT-200: must be in mint or clean condition. Melbourne area. John VK3ABW. Ph: (03) 568 7428.

ICOM IC-502: 6m SSB, SC9 link 70-85 MHz rec module. Black & White TV camera suitable for ATV use. Ian. Ph: (03) 523 9405.

OPERATING & MAINTENANCE MANUALS: or photocopies for "Dumont" cathode ray oscillograph Mod 304H, or contact address/telephone no for "Dumont Laboratories" or their agents. Also A11 mode 6 metre transceiver in working order. Reverse charges to Rob VK3XLZ. Ph: (03) 870 5792, or PO Box 477, Croydon, Vic. 3136.

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — QLD

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — SA

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — WA

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WANTED — TAS

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

WANTED — NT

QSL CARDS: for WIA QSL collection. Rare DX, uncommon & commemorative prefixes, pre-war & excellent pictorial designs especially appreciated. Please write to the Curator, VK3TL, Box 1, Seville, Vic. 3139, or ph (059) 64 3721 & cards will be picked up from your home if you live in the metropolitan area. For country & interstate readers, arrangements for pick-up can be made by contacting the Curator.

FOR SALE — ACT

TONO 7000E RTTY/CW/ASCII COMMUNICATIONS COMPUTER: Complete with manual & original packing $500 ONO. TNC2 with add-on 7910 modem board. $200 ONO. Richard VK1UE, QTHR. Ph: (062) 58 1228.

FOR SALE — NSW

BEAM: 5-element Hy-gain No 411 10 metre. 1 Crown rotator Model CAR 24. Both with manual. Perfect condition. $300. 1 Sideband SE-502 28.3 to 28.6 MHz, new in box. $90. Norm. Ph: (065) 69 5242.

DECEASED ESTATE — VK2DMM: Yaesu HF/SSB station complete. Yaesu FT707 transceiver, Yaesu FB707 power supply, Yaesu FC707 antenna tuning unit, with all manuals, all unmodified, performance & appearance as new. Will not separate. $700. Norbert Scott VK2QS. Ph: (049) 63 5653.

EPROMS BLANK INTEL 2716s: As new $2 ea. Bulk orders in excess of 100 units special price $1 ea. Ph: (049) 29 1967.

FT7: no mods, 10, 15, 20, 40, 80 m. Mic, mob mount, manual, schem circuit. Full set (5) Yaesu whips with λ 2m stub & gutter mount. K/wood AT130 tuner (8 bands) illum meter, mob mount, coax & fittings — the lot $480. Icom IC22S 2m FM 10/1W, mic, mob mount, manual, schem circ, 12 chan matrixed, plus diodes for extra chans. Complete overhaul by Icom 1984. $165. All equip VGC, very little use last 3 years. VK2ELG. Ph: (060) 43 1044.

ICOM IC-751 BASE/MOBILE HF TRANSCEIVER: General coverage rx, mint condition. $1350. Ph: (049) 45 4989.

KENWOOD TS-130SE TRANSCEIVER: & AT130 antenna tuner. 3.5 MHz to 29.7 MHz, 200W PEP. Perfect working order. $500 ONO. Ph: (02) 969 6606.

TRANSFORMERS: (as listed below). 1 off 240V Pr/6.3V 12A CT SEC. 1 off 0-230V/240V/250V Pr/5V 10A + 5V 10A CT SEC. 1 off 0-220V/240V/260V Pr/500V 250 mA CT SEC. 1 off 0-210V/220V/230V/240VPr/ 750V 250 mA SEC 250V 250 mA SEC 25V 250 mA SEC. 1 off 0-210V/230V/250V Pr/ 1500V 500 mA No CT. 1 off 0-220V/240V/260V Pr/1875V 750 mA CT SET. What offers? Art VK2AS, QTHR. Ph: (02) 467 1784.

FOR SALE — VIC

CLEARANCE TEST EQUIPMENT: commercial & home brew. Radio engineering & amateur handbooks circa 1940-1960. Ph: (03) 29 3523 for lists or inspection.

DECEASED ESTATE: Complete contents of amateur shack including components, test equipment, etc. Yaesu FT-107DM c/w FP-107 power supply $950. Yaesu FV-101DM digital VFO $250. Hy-gain 10-80m trapped vertical antenna $95. Fluke digital bench multi-meter 8000A $350. Mod 43 teletype $100. Precision model makers lathe. For further information contact Barry Wilton VK3XV. Ph: (03) 555 6281 between 7 & 9 pm.

KENWOOD R-5000 RECEIVER: 50 kHz to 30 MHz. AM, SSB, CW, FSK, 100 memories. Mint condition. $1000. Will pay postage if needed. Ph: (058) 21 0846 AH.

LINEAR AMPLIFIER: Collins 30-LI, Ex cond. $1300 ONO. Drake TR4, ex cond with power supply & some spare tubes. $700 ONO. Ph: (03) 842 6919 after 6 pm.

MODEL 15 TELEPRINTER: Offers. Two Siemens teleprinters. Both in excellent condition with power supplies, tested & working well. $150 ea. Tono 7000E communications terminal in ex condition incl monitor & many leads. $700. Complete 2 metre station — Icom IC-251A plus Mutek front end in mint cond. (Includes factory mods for preamp). Service manual. AG25 masthead preamp. 16 dBd beam antenna & fittings, cable etc. Aluminium stock for another 16 dBd ant (worth $90). 06/40 in chassis for conversion to linear. The whole lot for $1200. Gil VK3CQ, QTHR. Ph: (057) 55 1158 BH.

TOWER: Crank up to 50 feet, four section, complete with guys. $200. JIL SX100 scanner, not working. Offers. Ph: (03) 544 8958.

VERIAC: input 115V, out 110V. Ex cond $20. Q-multiplier, notch filter kit. Model 340-A. New. $20. Automatic keyer. Ex cond. $25. Power supply, regulated Southern Cross, 13.8V, 4A peak, 1.5A continuous, input 240V, with circuit diagram. Perf cond. $30. Skyphone VHF tcvr VC-10 series. Handbook, crystals for VC-10, AWA MR-20A carphone, instruction book #3-59650R. Instruction book #59680R AWA carphone junior installation. Best offer. Power supply, Southern Star, 240V in, 13.8V DC out, 4A peak, 1.5A continuous. PC $30. Hallam Magnetics power transformer. Input 240V, 50 Hz, 1 ph, 4.4A, output 1100V, .91A. New. $100. Vulcan Mini-range stovette. Elec, hotplate & oven. Ex cond. $100. Log books (3), Collins Radio Co, new. Collins labels. Collins instruction book & circuit for 625-1 VHF converter. Mechanical filters & catalogues 1963-64. Other Collins literature, etc. All in ex cond. Best offer. Ph: (055) 62 6016.

YAESU FT-200: SSB HF transceiver. Manuals, spare valves, four spare finals, power supply, hand mic. $260. Ph: (052) 55 4047.

YAESU FT-270RH: two metre FM transceiver. 5/45W output, 10 memories, dual VFOs & scanning facilities. Plus two metre vertical antenna, both under 12 month old & in excellent condition. $600. Scott. Ph: (03) 818 1934. ***Licenced Amateurs Only.***

FOR SALE — QLD

ANTENNA TUNER: Drake MN2000, 2kW, with 20/200/2000W power/SWR meter, manual. $350. Speech processor. Japan w/circuit. $30. Receiver, Drake R2B w/manual. Full coverage capability. 50 kHz IF with steep-sided LC filter. (Excellent for CW). $200. Hustler 5BTV vertical antenna wanted. Low imp headset wanted. John VK4SZ, QTHR. Ph: (070) 61 3276.

KENWOOD TS-520S: HF transceiver together with an AT-200 antenna tuner. All in excellent order, original packaging & manuals included for $550. Ph: Ron (075) 57 1336.

RF SIGNAL GENERATORS: Marconi TF995A/5 1.5/220 MHz FM/AM/CW $550. Marconi TF144H/4 10k/72 MHz AM/CW $200. Metrix 931H 50k/50 MHz AM/CW $200. Ratcliffe 205 45/180 MHz AM/CW $75. Airmec CT212 85k/32 MHz FM/AM/CW $50. Hewlett Packard 52.45L frequency counter 0/500 MHz $550. Takeda Riken Ditto $450. 8 two-way radios (3 base) $300 the lot. Will swap any, or all, for Tx Rx or transceiver. Bob VK4OY, QTHR. Ph: (07) 396 0886.

YAESU FT-757GX: HF transceiver, gen cov rx. Good cond with scanning mic & w/shop manual. Original packing $1100. VK4ALN QTHR. Ph: (075) 35 9854.

YAESU FT-225R: 2m all mode tcvr. 240/12V, rptr xtals. $350. Ken. Ph: (075) 58 2293.

1-WS C42, 1-WS C45: Both up & running 10m & 6 m FM. C42 — 23 to 38 MHz cont. C45 — 36 to 60 MHz cont. Plus spare C45 set nearly complete, good for spares. 2 power supplies to suit plus switches, cables, J boxes, etc. Plus circuit diagrams, manuals & other mod info. Also original carton. $500 the lot. VK4AUK, QTHR. Ph: (071) 29 6247.

432 MHz to 1296 MHz TRIPLER & FILTER: $35. FT-22IR in original condition. $450 ONO. FM321 70 cm with mobile antenna. $250. 8/8 Skeleton slot J beam $60. Chirnside 15/10 duo-band with balun. $110. Kevin. Ph: (07) 814 3006 AH or (07) 377 4286 BH.

FOR SALE — WA

KENWOOD TS-930S HF TRANSCEIVER: 160-10m & gen coverage receiver. In-built PS & auto ATU. Perfect cond with mic, h/book & original carton. $1600 including delivery Australia-wide. VK6ED, QTHR. Ph: (097) 52 1173.

FOR SALE — TAS

SWAN TRANSCEIVER: 240. Tribander (20, 40 & 80 metres). Valve job, with separate power supply unit. $250. Dave VK7DS. Ph: (002) 29 6538.

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Coaxial Cable Specials

Low Loss VHF/UHF Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	Insulation & Nominal Core O.D. mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	Nominal Capacitance pF/m	Nominal Attenuation MHz	Nominal Attenuation db/100 ft.	Nominal Attenuation db/100 m
	9913 80C	9½ (Solid) .108 bare copper .90Ω/M' 2.95Ω/km	Semi-solid Poly-ethylene .285	7.24	Duobond II® + 88% tinned copper braid 1.8 Ω/M' 6.0 Ω/km 100% shield coverage	50	84%	24	78.7	50 100 200 400 700 900 1000 4000	0.9 1.4 1.8 2.6 3.6 4.2 4.5 11.0	3.0 4.6 5.9 8.5 11.8 13.8 14.8 36.1
						Black PVC jacket.						

BELDEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG-8 to RG-213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same O.D. as RG8/U coaxial, it has substantially lower loss, therefore providing a low-cost alternative to hard-line coaxial cable. Your special price from ACME Electronics is only $4.84 per metre.

BELDEN Broadcast Cable RG-213/U MIL-C-17D is only $5.23 per metre, or BELDEN 22385 YR Commercial Version RG213, the same specification as 8267, for only $2.14 per metre. *Prices do not include Sales Tax.

For more information about the above, or any other BELDEN cable, simply contact our resident amateur radio operator, Colin Middleton (VK3LO) or our sales department.

Coaxial Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	Insulation & Nominal Core O.D. mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	Nominal Capacitance pF/m	Nominal Attenuation MHz	Nominal Attenuation db/100 ft.	Nominal Attenuation db/100 m
RG-213/U MIL-C-17D	**8267†** UL 1354 60C	13 (7x21) .089 bare copper 1.87Ω/M' 6.1Ω/km	Poly-ethylene .285	7.24	Bare copper 1.2Ω/M' 3.9Ω/km 97% shield coverage	50	66%	30.8	101.0	50 100 200 400 700 900 1000 4000	1.6 2.2 3.2 4.7 6.9 8.0 8.9 21.5	5.2 7.2 10.5 15.4 22.6 26.3 29.2 70.5
						Black non-contaminating PVC jacket.						

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